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Coos Bay District Office
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Coos Bay District Proposed Resource Management Plan Environmental Impact Statement

Volume II

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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Appendix A. Legal Guidelines

The following statutes and executive orders (as amended) constitute the major legal guidance for planning and management of lands administered by BLM in western Oregon. This list is not necessarily all inclusive but does represent the primary legal guidance to be considered in preparation of the Resource Management Plan.

Federal Land Policy and Management Act of 1976 (FLPMA)	43 USC 1701
The O&C Sustained Yield Act of 1937	43 USC 1181a
National Environmental Policy Act of 1969 (NEPA)	42 USC 4321
Environmental Quality Improvement Act of 1970	42 USC 4371
Executive Order 11514, Protection and Enhancement of Environmental Quality (1970)	
Taylor Grazing Act	43 USC 315
Recreation and Public Purposes Act	43 USC 869
Unlawful Inclosures or Occupancy Act	43 USC 1061
Mining and Minerals Policy Act of 1970	30 USC 21a
Mining Act of 1872	30 USC 26
Mineral Leasing Act of 1920 (Mineral Lands Leasing Act)	30 USC 181
Materials Act of 1947	30 USC 601
Geothermal Steam Act of 1970	30 USC 1001
Geothermal Energy Act of 1980	30 USC 1501
Antiquities Act of 1906	16 USC 431
Historic Sites, Buildings, and Antiquities Act	16 USC 461
National Historic Preservation Act	16 USC 470
Archaeological Resources Protection Act of 1979	16 USC 470aa
Reservoir Salvage Act of 1960	16 USC 580m-n
Fish and Wildlife Coordination Act	16 USC 661
Bald Eagle Protection Act	16 USC 668
Sikes Act	16 USC 670a
Migratory Bird Treaty Act	16 USC 703
Migratory Bird Conservation Act	16 USC 715
Wilderness Act	16 USC 1131
National Trail Systems Act	16 USC 1241
Wild and Scenic Rivers Act	16 USC 1271
Executive Order 11644, Use of Off-Road Vehicles on the Public Lands (1972)	
Executive Order 11989, Off-Road Vehicles on Public Lands (1977)	
Wild Free-Roaming Horses and Burros Act	16 USC 1331
Coastal Zone Management Act of 1972	16 USC 1451
Endangered Species Act of 1973	16 USC 1531
Soil and Water Resources Conservation Act of 1977	16 USC 2001
Executive Order 11988, Floodplain Management (1977)	
Executive Order 11990, Protection of Wetlands (1977)	
Coastal Barriers Resources Act	16 USC 3501
Land and Water Conservation Fund Act of 1965	16 USC 4601-4
Federal Water Pollution Control Act/Clean Water Act	33 USC 1251
Safe Drinking Water Act	42 USC 300 (f)
American Indian Religious Freedom Act	42 USC 1996
Resource Conservation and Recovery Act of 1976	42 USC 6901
Clean Air Act	42 USC 7401
Comprehensive Environmental Response, Compensation and Liability Act of 1980	42 USC 9601
Emergency Planning and Community Right-to-Know Act of 1986	42 USC 11001

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Appendix B. State Director Guidance for the RMP Process

According to Bureau regulations for preparing RMPs, "the State Director shall provide quality control and supervisory review, including plan approval, for plans and related environmental impact statements and shall provide additional guidance, as necessary, for use by District and Area Managers." "Guidance" means "any type of written communications or instructions that transmits objectives, goals, constraints or any other direction that helps District and Area Managers and staff know now to prepare a specific resource management plan."

Early in the process of concurrently preparing this RMP and five other RMPs which together cover all BLM-administered lands in western Oregon, the BLM State Director decided to develop comprehensive procedural guidance as planning criteria to assure consistent treatment of a variety of issues and concerns in the six plans. The intent to do this was conveyed to known interested parties in a mailer sent out by each BLM district office with planning responsibility on March 27, 1987. Suggestions for content of that guidance were solicited in the mailer.

There was limited public response, but that response, along with internal BLM recommendations, led to formulation of a proposed set of topics for State Director guidance. A mailer describing those topics were sent to the public for comment on August 11, 1987. Using further but still limited public comments, BLM modified its list of topics slightly and drafted Proposed State Director Guidance, which was sent out for public review by interested parties on May 13, 1988.

Although less than a hundred individuals and groups responded, many of the comments received were thoughtful and constructive, and addressed the proposals in depth. BLM undertook a substantial revision of many sections of the proposed guidance. This revision was done on a staggered schedule, to distribute the workload and provide timely guidance to the districts for each step in the process.

The first element of the guidance completed was Guidance for the Preparation of the Analysis of the Management Situation (AMS). This document summarizes important information about existing resource conditions, uses and demands, as well as about management activities and natural relationships. It provides the baseline for subsequent steps in the planning process, such as the design of alternatives and analysis of environmental consequences. The AMS also provides most of the data to be summarized in the "affected environment" chapter of the EIS. The AMS guidance prescribed minimum contents and table formats for the AMS for each plan. That guidance was essentially completed in October 1988, and slightly revised during 1989 and 1990.

A master glossary for the AMS was prepared as part of the State Director Guidance. It was completed in 1989, and later revised for inclusion in each Draft RMP.

The Guidance for Formulation of Alternatives was essentially completed in October 1990 but underwent modest revision during 1991 and 1992. A copy of the final version of this guidance is included in this appendix.

Two other sections, Guidance for Analytical Techniques Needed to Estimate Effects of Alternatives and Guidance for Use of the Completed Plan, were completed in July 1991, with slight modification of the former in 1992. Descriptions of complex analytical techniques have been appendicized to discussions of the relevant analyses in Chapters 3 and 4. The Use of the Completed Plan section was wrapped into the equivalent section of Chapter 2 of the Draft RMP/EIS.

The original draft guidance had two other sections that never became final. Guidance for the Executive Summary was dropped because the State Director's staff prepared that summary. Guidance for expressing consistency with plans, programs and policies of other agencies was never formalized, as BLM staff worked with state agencies and county planners until the Draft RMP/EISs were almost complete, on ways to express such consistency.

Guidance for Formulation of Alternatives

Introduction

The purpose of alternatives is to identify a range of reasonable combinations of resource uses and management practices that respond to planning issues and provide management direction for all resources. Five common alternatives will be addressed in each RMP, to provide a consistent set of distinct choices among potential management strategies.

A no change from the existing land use plan alternative will also be addressed. This is the "no action" alternative. In the other alternatives all existing land use decisions not found valid for continued implementation after 1990 (through an analysis summarized in the Analysis of the Management Situation), will be reconsidered.

Common alternatives that identify specific management actions along District boundaries will be consistent. Examples include elk management areas, spotted owl corridors or visual corridors.

This Guidance for Formulation of Alternatives may be modified later based on information identified in the districts' analyses of the management situation, or refinements that flow from the districts' site-specific development of common alternatives.

Goals and Objectives of the Common Alternatives

The purpose of the goal and objective statements for the five common alternatives (A through E) is to guide development of specific criteria. Each alternative, if implemented, is intended to achieve or meet its goal. Goal and objective statements focus on general direction of alternatives rather than technical points in issue-related criteria for the alternatives. In each alternative all resource management values would be accommodated to the extent consistent with the primary goals and objectives for that alternative.

Specific Guidance on Common Alternatives

The common alternatives would differ primarily in the way they allocate primary uses of lands (for example, lands allocated to intensive forest management, and lands allocated to protection of riparian zones).

The discussion on page 4 through part of pages 14 and 15 describes criteria for addressing each of the eleven planning issues in the formulation of the common alternatives. It also describes how land use allocations and management actions would vary in response to each issue. Within the specific constraints provided by the guidance for addressing each issue, the districts have flexibility to formulate the common alternatives as they consider appropriate to meet the goals and objectives of each alternative.

	Alternative A	**Alternative B**
GOALS:	Emphasize high production of timber and other economically important values on all lands to contribute to community stability.	Emphasize timber production to contribute to community stability consistent with the variety of other land uses such as fish and wildlife habitat, recreation, and scenic resources on O&C and CBWR lands. Give equal consideration to all resource values on public domain lands.
OBJECTIVES:	• Produce the highest sustained yield of timber on all suitable forest lands legally available for harvest. • Contribute to ecological functions important to timber productivity and to habitat diversity to the extent possible consistent with the allocation for timber production. • Manage threatened and endangered species habitat as legally required. • Provide Research Natural Areas and eligible Areas of Critical Environmental Concern to the extent consistent with the allocation for timber production. • Manage appropriate Congressionally designated areas to maintain and enhance their scenic values. • Meet legal requirements for protection of wetlands and water quality, to protect anadromous fish habitat and other relevant values. • Emphasize substantial developed and dispersed motorized recreation uses. • Find no additional rivers suitable for designation under the Wild and Scenic Rivers Act. • Make land tenure adjustments which enhance BLM long-term sustained yield timber harvest opportunities. • Provide no special management in rural (residential) interface areas.	• Produce a high sustained yield of timber on O&C and CBWR lands, and on public domain lands where nontimber uses and values are of lesser importance than timber production. • Contribute to ecological functions important to timber productivity and to habitat diversity using a system that maintains old growth and mature forest in large and small blocks. • Protect habitat of all threatened and endangered species and species with high potential for listing. Protect habitat of other species of substantial concern to the extent consistent with high timber production. • Retain existing Research Natural Areas (RNAs) and Areas of Critical Environmental Concern (ACECs). Provide new ones from eligible areas to the extent consistent with the emphasis on timber production. • Manage scenic resources in selected areas of high recreation use. • Meet legal requirements for protection of wetlands and water quality and provide moderate additional protection for anadromous fish habitat, other substantial streams, and other water. • Provide for a wide range of developed and dispersed motorized recreation uses and opportunities, to minimize conflicts among recreation user groups. • Find eligible river segments suitable for designation as recreational, if they are important and manageable, and designation would not cause adverse economic impact. • Make land tenure adjustments which enhance BLM long-term sustained yield timber harvest opportunities on O&C and CBWR lands, and which benefit a variety of uses and values on public domain lands. • Adopt appropriate special forest management practices on BLM-administered lands intermingled with or adjacent to rural interface areas zoned for most dense residential occupancy.

Alternative C

Provide timber production to contribute to community stability consistent with maintenance of biological diversity and the variety of other uses such as fish and wildlife habitat, recreation, and scenic resources on all lands.

- Produce a moderate sustained yield of timber.
- Provide biological diversity using a system that maintains some old growth and mature forest, focusing on protection of areas where special status plant and animal species cluster.
- Protect habitat of all threatened and endangered species and species with high potential for listing. Protect habitat of other species of substantial concern through emphasis on biological diversity and to the extent consistent with moderate timber production.
- Retain existing RNAs and ACECs. Provide new ones from eligible areas except where lands managed by others are considered to provide more appropriate opportunities.
- Manage scenic resources in selected high use areas, particularly emphasizing protection in corridors of existing and proposed wild and scenic rivers and major trails.
- Provide substantial protection for anadromous fish habitat, other substantial streams and other water environments.
- Provide for a wide range of recreation opportunities emphasizing dispersed use, while reducing conflicts among recreational user groups.
- Find eligible river segments suitable for designation as scenic or recreational, if they are important and manageable, but not suitable for designation as scenic if designation would cause adverse economic impact.
- Make land tenure adjustments to benefit a variety of uses and values.
- Adopt appropriate special forest management practices in rural interface areas zoned for moderate or high density residential occupancy.

Alternative D

Emphasize protection and reestablishment of spotted owl habitat, along with management and enhancement of other values such as dispersed nonmotorized recreation opportunities and scenic resources, while sustaining some timber production.

- Produce a sustained yield of timber consistent with allocations for other uses and values.
- Protect habitat of the spotted owl in accordance with the Owl Conservation Strategy.
- Protect habitat of all threatened and endangered species, species with high potential for listing, and species of related concern.
- Retain all existing RNAs and ACECs. Provide new ones from eligible areas except where lands managed by others are considered to provide more appropriate opportunities.
- Manage all identified scenic resources.
- Provide substantial protection for wetlands and riparian areas along most streams and other water.
- Emphasize dispersed nonmotorized recreation opportunities.
- Find eligible river segments suitable for designation as wild, scenic or recreational, if they are important and manageable.
- Make land tenure adjustments which would emphasize enhancement of nontimber uses and values.
- Adopt special timber harvest and forest management practices in rural interface areas zoned for moderate or high density residential occupancy.

Alternative E

Emphasize protection of older forests and management and enhancement of values such as dispersed nonmotorized recreation opportunities and scenic resources.

- Produce a sustained yield of timber consistent with allocations for other uses and values.
- Protect all old growth and older mature forests.
- Protect habitat of all threatened and endangered species, species with high potential for listing and species of related concern.
- Retain all existing RNAs and ACECs and designate all eligible areas.
- Manage all identified scenic resources and provide some visual resource protection for all lands.
- Manage all riparian areas and wetlands to maintain and improve water quality and fisheries habitat, and contribute to wildlife habitat diversity.
- Emphasize dispersed nonmotorized outdoor recreation opportunities.
- Find all eligible river segments suitable for designation as wild, scenic or recreational rivers.
- Make land tenure adjustments which would emphasize enhancement of nontimber uses and values.
- Adopt special timber harvest and forest management practices extensively buffering rural interface areas zoned for moderate or high density residential occupancy and other rural interface areas as appropriate.

	All Common Alternatives	**Alternative A**
Issue No. 1: Timber Production Practices: Which forest lands should be available for timber management, and what practices should be used on those lands?	Guidance for All Common Alternatives: Lands allocated to intensive forest management under any of these alternatives would normally provide the highest nondeclining harvest level (even flow) of timber when the following conditions prevail: • Effective silvicultural techniques (such as clear cutting, shelterwood or partial cutting) appropriate to the land allocations are used. • All feasible site preparation and intensive management practices are applied. • Anticipated merchantability is the only constraint on minimum average stand diameter slated for future harvest. (In some areas this may result in harvest of timber stands as young as 40 years for several decades during the early to middle part of the next century under some alternatives.) • Adequate budgets are available to support the resultant timber sale program and allied intensive management practices, as well as scheduled monitoring linked to those activities. The common alternatives assume these practices and conditions on the lands allocated to intensive timber management, but incorporate less intensive management practices on other available forest lands to the extent needed to be consistent with the allocation of those lands. Where consistent with the goals and objectives of each alternative, the following silvicultural and harvest practices would be implemented on lands allocated primarily to timber management, to meet multiple land use objectives: Minimize regeneration delay by reforesting harvested sites as soon as practical. Calculate an empirical regeneration period based on representative stocking survey results, expected timber sale contract lengths and management objectives. Reforest harvested lands with indigenous commercial tree species. Emphasis would be placed on utilization of genetically improved stock in accordance with the Western Oregon Tree Improvement plan. Manage tree seed orchards to produce adequate supplies of genetically improved seed. Use available site preparation and seedling protection practices, including herbicides, using an integrated vegetation management approach. Emphasize those techniques that have proved most effective in assuring seedling survival and growth. (Actual practices will be based on site-specific analysis following completion of the RMP.) Convert to conifers those lands classified as commercial forest lands presently occupied by grass, hardwoods and brush.	Allocate all forest lands for timber production consistent with the management direction for other resources (Issue Nos. 2 and 3, etc.) in this alternative, except the following: Nonsuitable Woodland (See Figure B-1 for Chart showing TPCC categories.)

Alternative B	Alternative C	Alternative D	Alternative E
Allocate all forest lands for timber production consistent with the management direction for other resources in this alternative, except the following: Nonsuitable Woodland Suitable Woodland - Low Site	Allocate all forest lands for timber production consistent with the management direction for other resources, except the following: Nonsuitable Woodland Suitable Woodland - Low Site Suitable Woodland - Nonsuitable Commercial Forest Land	Allocate all forest lands for timber production consistent with the management direction for other resources, except the following: Nonsuitable Woodland Suitable Woodland - All Categories	Allocate all forest lands for timber production consistent with the management direction for other resources, except the following: Nonsuitable Woodland Suitable Woodland - All Categories The Fragile Gradient-Restricted component of the Fragile Suitable TPCC category Site Class V

	All Common Alternatives	**Alternative A**
Issue No. 1 (Continued)	Plan hardwood sites for management of a sustained yield of hardwoods, where consistent with allocations for other uses or values. Implement commercial thinning of present and future stands where practicable and where research indicates increased gains in timber production are likely. Practice initial spacing control of seedlings/ saplings through planting or thinning in conjunction with the control of competing vegetation, to maximize wood production by concentrating site resources in individual tree growth. Plan nitrogen fertilization applications for all present and future stands where research indicates increased wood yields would result. Plant specific root disease centers with resistant tree species. Consider uneven-age management in stands where this method would be economically feasible and would maintain environmental values. Consider efficiency of field operations and assurance of prompt reforestation in selecting the size of timber harvest units. Apply proper soil management measures to maintain soil productivity.	
Issue Nos. 2 and 3: Old-Growth Forests and Habitat Diversity To what extent and where should old-growth and/or mature forest habitats be retained, maintained or reestablished to meet various resource objectives? To what extent and where should BLM manage habitat to support populations of native wildlife species?	Any wildlife habitat management practice (such as nest boxes, road closures and forage seeding) not listed in the following could be implemented under any of the alternatives, as long as it is compatible with other management objectives. All special habitat features would be managed to protect their values. Mature and old-growth forests would be retained where Congressional designation of areas requires it. Snags and/or wildlife trees (to be converted to snags) would be retained where they occur on lands not allocated to timber harvest, except where public safety is a concern, and if left standing as nonmerchantable material on available forest lands. Where it would contribute to meeting wildlife tree objectives, create snags in areas not allocated primarily to timber production. A habitat goal of timber sale contracts would be to leave all snags and nonmerchantable trees that can be left consistent with safety considerations.	Mature and old-growth forests would be retained on most lands excluded from planned timber harvest by inclusion in the following allocations and TPCC categories: Nonsuitable Woodland Riparian Management Areas Existing high-use recreation sites T&E species recovery areas where timber harvest is prohibited Wilderness Areas

Alternative B	Alternative C	Alternative D	Alternative E
Contribute to habitat diversity using a system that protects mature and old-growth forest in large and small blocks. Mature and old-growth components of the forest would be distributed in a corridor system by seed zone and elevation. In the corridor system large blocks of approximately 640 acres would be connected by a series of small, stepping stone blocks of approximately 80 acres, spaced at about one-mile intervals. Blocks would be limited to defined corridor areas. Public Domain lands and the following allocations and TPCC categories on O&C and CBWR would receive priority for placement into the system, to the extent that they fit; for instance, if they provide needed habitat and are suitably located to contribute to the system. Nonsuitable Woodland Suitable Woodland - Low Site Riparian Management Areas Recreation Sites T&E species recovery areas where timber harvest is prohibited Special Areas (Natural Areas, ACECs) Wilderness Areas	This alternative would provide for retention and improvement of biological diversity. Blocks of forest land at least 600 acres in size and, where relevant opportunities exist, at least 2500 acres in size (including cornering tracts) would be identified as old-growth restoration and retention areas, totalling 15 to 20 percent of BLM-adminstered forest land. Identification of these areas would focus on protection of older forest stands, connectivity between larger reserves and subregions, and protection of identified areas where special status plant and animal species cluster. The remaining BLM-administered forest lands, not excluded from timber harvest to address other issues, would be subject to intermediate harvests for density management where feasible, to maintain open canopy conditions and promote retention of mixed species, as well as accelerate development of old-growth structure conditions and prepare the stands for regeneration	This alternative would manage habitats on BLM-administered lands to provide for a number and distribution of spotted owls that ensures continued existence of a well distributed population on those lands, so they may interact with spotted owls throughout the geographic range of the species, as recommended by the Conservation Strategy for the Northern Spotted Owl. Suitable wildlife trees would be retained to contribute to the maintenance or attainment of cavity-dweller populations on BLM-administered lands at 60 percent of the optimum woodpecker population level. Wildlife tree and down log management practices would be used on the available forest lands, including but not limited to retention of green culls, snags and down logs. All special habitat features would be appropriately buffered.	This alternative would preserve the following: - all existing forest stands over 150 years old. - additional lands within 400 feet of the above stands, to assist in maintaining natural ecological elements, protect the older stands from edge effect and natural disaster, and interconnect them into a sustainable network. - all suitable habitat forest stands which most closely match the lands within two miles of each spotted owl site occupied by a single or pair of owls in the last six years (1985-1990). In addition protect younger forest where needed to provide contiguous habitat within a mile of those sites. - in each section where BLM administers at least half of the land, a 40-acre block of the oldest stands remaining, concentrated around headwaters streams, to provide habitat for amphibians and nesting for pileated woodpeckers.

	All Common Alternatives	Alternative A
Issue Nos. 2 and 3 (Continued)		
Issue No. 4: Threatened and Endangered (and Other Special Status) Species Habitat What should BLM do to manage Federally listed threatened or endangered plants and animals and to prevent future Federal listing of plants and animals as threatened or endangered species?	Protect, monitor and manage habitats of Federal listed and proposed species in accordance with the Endangered Species Act and recovery plans, as legally required for self-sustaining survival.	Timber production constraints would be assumed in the formulation of the alternative only if critical habitat has been designated or there is a recovery or conservation plan within a month after completion of the Analysis of the Management Situation. Manage for the conservation of, and mitigate actions to protect habitats of, Federal Candidate, State Listed and Bureau Sensitive species where such actions would not diminish commercial use such as timber production.
Issue No. 5: Special Areas What areas on BLM-administered lands need special management to prevent irreparable damage to important historic, cultural or scenic values; to protect botanical or fish and wildlife resources or other natural systems or processes; and to protect life and safety from natural hazards? Which of these areas should be formally designated as Areas of Critical Environmental Concern (ACEC)?	Any areas considered appropriate for Research Natural Area (RNA) designation would also be considered appropriate for ACEC designation.	Designate potential ACECs that meet criteria only if the relevant values are not protected by other authorities (e.g., Wild River designation, the Endangered Species Act). Existing ACECs and potential ACECs that meet the preceding standard, including RNAs and proposed RNAs, would be retained or designated on nonforest lands or nonsuitable woodlands of no substantial mineral potential. Other existing ACECs and RNAs would be revoked.

Alternative B	Alternative C	Alternative D	Alternative E
Suitable wildlife trees and/or snags would be retained to maintain, where possible, cavity-dweller populations at 40 percent of the optimum woodpecker population levels in new timber harvest units. Wildlife tree management practices would be used on the available forest lands, including retention only of green culls and snags.	harvest in the future. Regeneration harvests on these lands would be either heavy partial cuts (green-tree retention) or group selection cuts, and would not occur until after a stand had established old-growth characteristics. The lands in old-growth restoration and retention areas, which have not attained old-growth characteristics, would be subject to similar density management, where feasible, until they attain such a condition. Suitable wildlife trees would be retained to contribute to the maintenance or attainment of cavity-dweller populations on BLM administered lands at 60 percent of the optimum woodpecker population level. Wildlife tree and down log management practices would be used on the available forest lands, including but not limited to retention of green culls, snags and down logs. All special habitat features would be appropriately buffered.		In addition to retention of wildlife trees on lands not allocated to timber management, suitable wildlife trees would be retained to contribute to the maintenance of cavity-nester populations at 60 percent of the maximum potential population level on lands allocated to timber management. Wildlife tree and down log management practices would be used on the available forest lands, including but not limited to retention of green culls, snags and down logs. All special habitats would be appropriately buffered.
Same as Alternative A, except protect habitats of Federal Candidate, State Listed and Bureau Sensitive Species to the full extent on public domain land, and protect habitats of Federal Candidate (i.e., Category 1 and 2) species known only to occur on BLM-administered lands to the extent considered necessary to prevent their federal listing.	Same as Alternative B except for additional protection of special status species provided by criteria for Issues 2 and 3.	Manage all BLM-administered lands to support the conservation and protection of all Federal Candidate, State Listed, and Bureau Sensitive species and their habitats.	Same as Alternative D.
Retain all existing ACECs and RNAs. Designate potential ACECs that meet criteria only if the relevant values are not protected by other authorities. Do not allocate new RNAs on available O&C or CBWR land if a similar feature can be protected on a National Forest. Designate all potential ACECs (including RNAs) on Public Domain lands, nonforest lands, nonsuitable woodlands, and other lands allocated to nontimber uses.	Retain all existing ACECs and RNAs. Designate potential ACECs that meet criteria only if the relevant values are not protected by other authorities.	Retain all existing and designate all potential ACECs.	Same as Alternative D.

	All Common Alternatives	Alternative A
Issue No. 6: Visual Resources Which, if any, areas of BLM lands should be managed to reduce visual impacts or enhance visual (scenic) quality?	Note: Guidance for Issue 11 (Rural Interface Area Management) also addresses and defines visual resource management for Alternatives B, C, D and E in rural interface areas, except where this Issue 6 guidance sets a higher standard of visual resource management. Guidance for Issue 9A (Wild and Scenic Rivers) establishes criteria that will substantially dictate visual resource management by alternative in proposed wild and scenic river corridors. See Issue 9A and Issue 11 guidance for details.	Provide VRM Class I management within existing boundaries designated by Congress for exclusive management. Manage all other available (for timber harvest) forest land under VRM Class IV management objectives. Manage other lands as inventoried.
Issue Nos. 7 and 8: Stream/Riparian/Water Quality Where and how should riparian zones be managed to protect and improve water quality, fisheries and wildlife habitat? What actions should be undertaken to comply with state water quality standards? What should BLM do to manage for special needs such as municipal and domestic use?	Guidance for All Common Alternatives: Establish Riparian Management Areas (RMAs) on perennial streams (generally, 3rd order and larger streams), lakes, ponds and other waters, to meet Oregon Forest Practices Act requirements and Oregon water quality standards. Typical average widths of RMAs by alternative are displayed in Table 1. Within those RMAs no lands would be considered "available" (to offer timber for sale as part of the allowable sale quantity). Some timber harvest may occur, however, to achieve resource management objectives. These activities may include road construction and yarding corridors across streams and riparian zones to facilitate timber harvest outside the RMA. Logging, road building and site preparation methods would be designed to minimize the number and/or size of mass soil movements and to maintain the integrity of the RMAs. Other activities such as mining, recreation and ORV use would be regulated to protect water quality. Stream and riparian habitat improvement measures may be taken on any streams to improve water quality, fish habitat and/or wildlife habitat. Activities would be designed to meet Oregon Forest Practices Act (OFPA) requirements and Oregon water quality standards. Protect wetlands in accordance with Executive Order 11988 and 11990. Comply with written agreements with public water systems serving municipalities.	
Issue No. 9: Recreation Resources What areas or sites should be designed and/or managed to protect or enhance a variety of recreational opportunities?	Manage for dispersed recreation activities consistent with managed forest settings, including hunting, fishing, sightseeing, riding/hiking, and rafting. Maintain and manage existing recreation facilities which make available significant dispersed recreation opportunities, including recreation sites, boat ramps, trails, interpretive signs and related improvements. Manage existing Special Recreation Management Areas (SRMAs) and delineate Extensive Recreation Management Areas (ERMAs).	Manage existing high-use recreation sites and trails and expand them where needed. Close low use recreation sites and trails. Designate lands open to off-road vehicles (ORV) and leave roads open to motorized use, except where such designation would conflict with other allocations.

Alternative B	Alternative C	Alternative D	Alternative E
Provide VRM Class I management within existing boundaries designated by Congress for exclusive management. Manage as inventoried all available forest land adjacent to (within a quarter mile) developed recreation sites, state and federal highways, state scenic waterways, and rivers designated under the federal Wild and Scenic Rivers Act. Manage all other available forest land under VRM Class IV management objectives. Manage other lands as inventoried.	Same as Alternative B, except on available forest land where BLM-administered land makes up more than half of a viewshed, manage lands as inventoried.	Manage all lands as inventoried.	Same as Alternative D, except manage as VRM Class III all BLM-administered lands inventoried as Class IV; and manage as VRM Class I BLM-administered lands adjacent to (within a quarter mile) developed recreation sites, state and federal highways, state scenic waterways and rivers designated under the federal Wild and Scenic Rivers act.
Same as Alternative A, except support the State's Regional Economic Development Plan for the geographic area, retain options for new SRMAs and high value potential recreation sites and trails on Public Domain lands, maintain and/or improve all existing developed recreation sites, and consider reopening sites closed in recent years.	Allocate and manage new SRMAs. Continue management of all existing recreation sites and trails, and consider reopening sites closed in recent years. Emphasize wildlife viewing, interpretation and related old-growth forest recreation opportunities, both to attract nonlocal visitors and to serve local users. Retain options for future development of high value potential sites, trails and sightseeing opportunities. Impose additional ORV limitations or road closures to protect wildlife habitat or old-growth forest recreation opportunities, minimize conflicts with hikers and horseback riders, or meet other resource objectives.	Same as Alternative C, except manage for an optimum range of nonmotorized recreation. Retain options for future development of recreation sites and facilities for dispersed recreation opportunities. Retain existing pockets of old-growth forest that are both adjacent to and accessible from existing or potential recreation areas. Prohibit ORV and road use as appropriate to improve wildlife habitat or protect the ecosystem.	Same as Alternative D.

Table 3-1. Riparian Management Areas

Stream Order	Average RMA Width* (each side of the stream in feet) ALT. A	ALT. B	ALT. C	ALT. D	ALT. E
1					50
2				60	60
3	75	75	105	140	200
4	75	100	150	200	200
5	75	140	210	280	280
6	75	160	240	320	320
Lakes, Ponds & Other Waters	75	100	150	200	400

* Actual RMA widths would be determined by on-the-ground riparian vegetation, terrain and stream characteristics, but would be a minimum of 50 feet on all 3rd order and larger streams. First and second order streams would have RMAs designated if perennial or if the beneficial uses warrant.

	All Common Alternatives	Alternative A
Issue No. 9A: Wild and Scenic Rivers What, if any, rivers should be found suitable for designation?	Provide interim protection for all river segments determined to be suitable, until Congressional action on BLM plan recommendations. Interim protection should be appropriate to the highest category for which the river is determined to be suitable. Manage Congressionally designated rivers consistent with their designation.	No rivers found suitable for designation under any classification.
Issue No. 10: Land Tenure In what areas would BLM-administered lands be sold, exchanged or transferred out of federal ownership under other authorities to improve management efficiency and benefit resource program objectives? In what areas would BLM attempt to acquire lands to improve management efficiency and benefit resource program objectives?	A major lands program effort would use exchanges to consolidate land ownership patterns to benefit one or more of the resources managed, such as timber, watershed, wildlife habitat, recreation, cultural, botanical, and minerals. Land tenure adjustment would be guided by a three-zone concept utilizing the following standards: Zone 1 includes areas currently identified as having high public resource values, and other efficiently managed lands. The natural resource values may require protection by federal law, Executive Order or policy. These lands may have other values or natural systems which merit long term public ownership. They do not meet the criteria for sale under FLPMA Section 203(a) and would generally be retained in public ownership. The Zone 1 boundaries should be relatively close to or on BLM property lines except where the intent is to show preferred acquisition areas. Zone 2 includes lands that are suitable for exchange because they form discontinuous ownership patterns, are less efficient to manage than Zone 1 lands, and may not be accessible to the general public. Where appropriate opportunities are identified, these BLM-administered lands may be exchanged for other lands in Zones 1 or 2, transferred to other public agencies, or given some form of cooperative management. These lands would not be expected to meet the criteria for sale under Section 203(a), and would not be identified as suitable for such sale. Zone 3 includes lands that are scattered and isolated with no known unique natural resource values. Zone 3 lands are available for use in exchanges for private inholdings in Zone 1 (high priority) or Zone 2 (moderate priority). They are also potentially suitable for disposal through sale.	Exchanges would be made to acquire lands which would enhance the nondeclining harvest level of the commercial forest land managed by BLM, by improving age class distribution or other harvest level determination factors. Factors to consider include site quality, access to public forest land, logical logging units, and management of public forest land to facilitate timber harvest. No exchanges would be made to acquire lands more valuable for nontimber uses. No commercial timberland would be sold or leased. Leases or conveyance of land in Zones 2 and 3 other than commercial timberland would be made under the Recreation and Public Purposes Act to provide appropriate facilities or services.

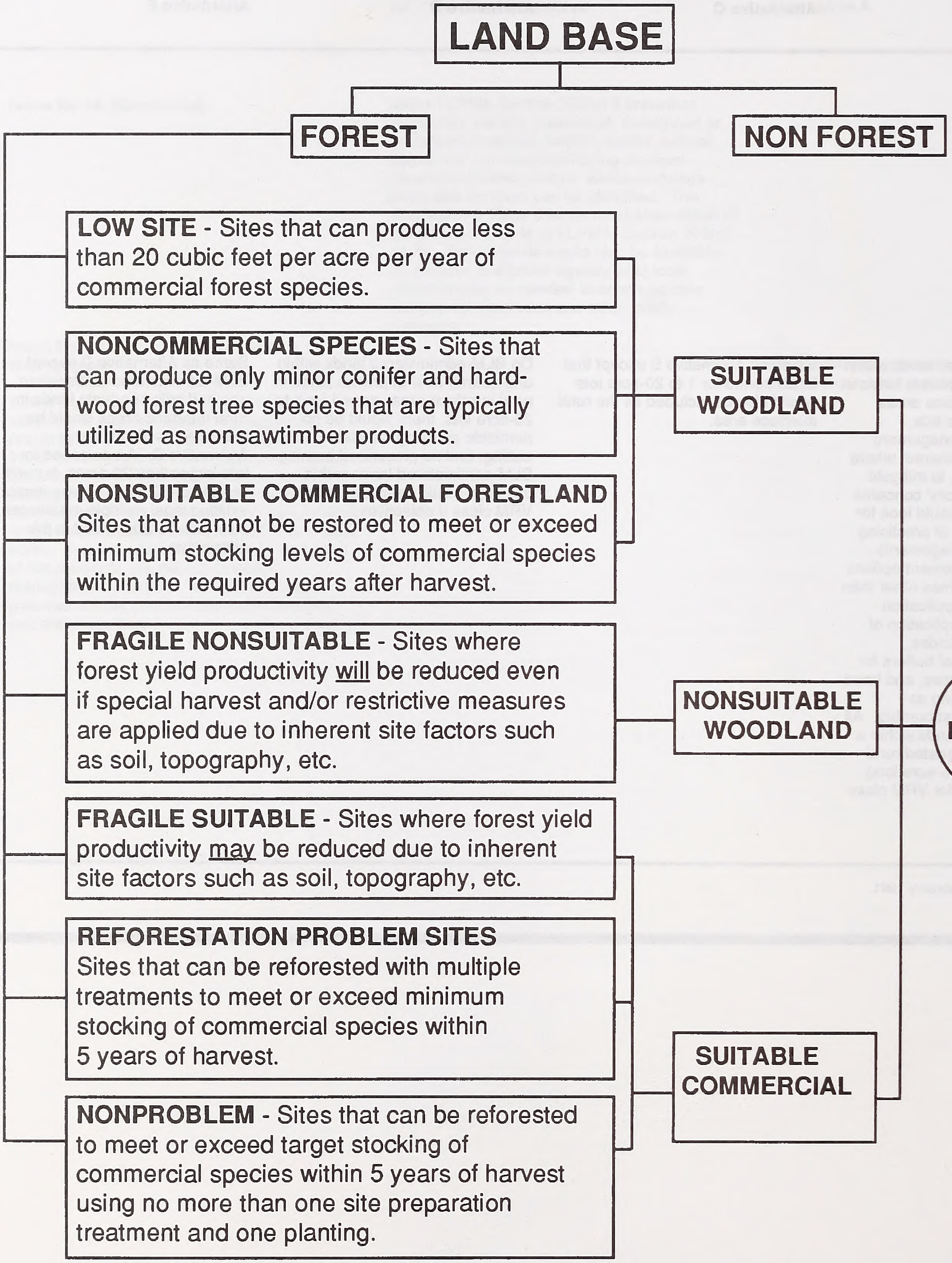
Alternative B	Alternative C	Alternative D	Alternative E
No rivers found suitable for designation as wild or scenic. River segments eligible for wild, scenic or recreational classification found suitable for designation as recreational, if all of the following circumstances exist: - No net adverse economic impacts on the local economy. - River segment possesses at least one outstandingly remarkable value for which it is considered by BLM to be the top river in the State Comprehensive Outdoor Recreation Plan (SCORP) region. - BLM can effectively manage the outstanding values of the river segment.	River segments eligible for scenic or recreational river status found suitable for designation consistent with their highest potential classification, and river segments eligible for wild classification found suitable for designation as scenic, if all of the following circumstances exist. If only the economic impact test is not met, find suitable for designation as recreational. - No net adverse impacts on the local economy. - River segment possesses at least one outstandingly remarkable value for which it is considered by BLM to be among the top two rivers in the SCORP region. - BLM can effectively manage the outstanding values of the river segment.	Eligible river segments found suitable for designation consistent with their highest potential classification if the following circumstances exist. - River segment possesses at least one outstandingly remarkable value for which it is considered by BLM to be among the top four rivers in the SCORP region. - BLM can effectively manage the outstanding values of the river segment.	All eligible river segments found suitable for designation consistent with their highest potential classification.
Exchanges of O&C and CBWR lands would be made primarily to acquire lands which would enhance timber management opportunities. Exchanges of public domain lands would be made to benefit one or more of the resources managed, including nontimber values. Sale of O&C and CBWR lands other than available commercial forest lands, and of public domain lands, would be made to dispose of lands that meet any of the criteria of FLPMA Section 203(a). Leases on such lands would be made to accommodate other uses. Leases or conveyances under the Recreation and Public Purposes Act would be made in Zones 2 and 3 to provide appropriate facilities or services.	Same as Alternative B, except emphasis would also be given to exchanges of O&C and CBWR lands that would contribute to conservation of biological diversity.	Land exchanges would be made to benefit one or more of the resources managed. Exchanges involving disposal of timber to acquire lands containing greater nontimber values would be emphasized. Sales of lands other than available commercial forest lands would be made to dispose of lands that meet criteria (1) or (2) of FLPMA Section 203(a), but sales of land that meet only criterion (3) would not be made. No lands would be leased, except leases and conveyances under the Recreation and Public Purposes Act would be made in Zones 2 and 3 to provide facilities or services for the benefit of the public.	Same as Alternative D.

	All Common Alternatives	Alternative A
Issue No 10. (Continued).	under FLPMA Section 203(a) if important recreation, wildlife, watershed, threatened or endangered species habitat, and/or cultural values are not identified during disposal clearance reviews and no viable exchange proposals for them can be identified. The discussion of Zone 3 lands must state which of the disposal criteria in FLPMA, Section 203(a), apply. Zone 3 lands would also be available for transfer to another agency or to local governments, as needed to accommodate community expansion and other public purposes.	
Issue No. 11: Rural Interface Area Management Which BLM-administered lands should be allocated to receive special management practices due to the concerns of residents who live in close proximity? (Rural interface areas are areas where BLM-administered lands are adjacent to or intermingled with privately owned lands where county zoning has created or allows for creation of lots as small as 1 to 20 acres. In most rural interface areas concerns of the residents are related to forest management practices, visual quality and potential affects on domestic water sources and water supplies.)		No special management actions except those that address other issues.

Alternative B	Alternative C	Alternative D	Alternative E
On BLM-administered lands within one quarter mile of private lands in identified rural interface areas zoned for 1 to 5-acre lots, customary forest management practices would be altered, where realistically feasible, to mitigate the adjacent neighbors' concerns (i.e., management would look for alternative methods of practicing intensive forest management). Examples of management options include harvest regimes other than clearcutting, hand application rather than aerial application of herbicides and pesticides, inclusion of additional buffers for domestic water sources, and hand piling slash for burning as opposed to broadcast burning. All BLM-administered lands within a quarter mile of designated rural interface areas 1 to 5-acre lots) would be managed for VRM class III objectives.	Same as Alternative B except that lands zoned for 1 to 20-acre lots would also be included as the rural interface area.	On BLM-administered lands within one quarter mile of private lands in rural interface areas zoned for 1 to 20-acre lots, there would be no herbicide spraying, no clear cutting, and no prescribed burning. BLM-administered lands within this area would be managed for VRM class II objectives.	Same as Alternative D except BLM-administered lands within one half mile of private lands in rural interface areas would be managed as discussed in Alternative D. Areas zoned for lots larger than 20 acres, but with tax lots of 20 acres or less and/or existing legal multiple residences, may also be addressed in this alternative.

Note: Table revised February 1991.

Figure B-1


LAND BASE
FOREST
NON FOREST
LOW SITE - Sites that can produce less than 20 cubic feet per acre per year of commercial forest species.
NONCOMMERCIAL SPECIES - Sites that can produce only minor conifer and hardwood forest tree species that are typically utilized as nonsawtimber products.
NONSUITABLE COMMERCIAL FORESTLAND Sites that cannot be restored to meet or exceed minimum stocking levels of commercial species within the required years after harvest.
FRAGILE NONSUITABLE - Sites where forest yield productivity will be reduced even if special harvest and/or restrictive measures are applied due to inherent site factors such as soil, topography, etc.
FRAGILE SUITABLE - Sites where forest yield productivity may be reduced due to inherent site factors such as soil, topography, etc.
REFORESTATION PROBLEM SITES Sites that can be reforested with multiple treatments to meet or exceed minimum stocking of commercial species within 5 years of harvest.
NONPROBLEM - Sites that can be reforested to meet or exceed target stocking of commercial species within 5 years of harvest using no more than one site preparation treatment and one planting.
SUITABLE WOODLAND
NONSUITABLE WOODLAND
RMP PROCESS
SUITABLE COMMERCIAL

Sensitivity Analyses

Sensitivity analysis is a process of examining specific opportunity costs and trade-offs which would result from making changes in single sensitive elements of an alternative. Such analyses are helpful in developing the preferred alternative, to make it most effective in reconciling potential conflicts and optimizing overall benefits. The sensitivity analysis will have the further benefit of informing the public about certain trade-offs, which should facilitate their offering informed preferences in their comments on the Draft RMP/EIS.

Because of the number of issues, concerns and alternatives, sensitivity analysis must be tightly focused to be manageable. The analysis, therefore, will focus on mid-range common alternatives and the preferred alternative.

At a minimum, the following will be analyzed for effects on timber harvest (ASQ) and related jobs and county revenues, and on other relevant resources or values:

1. For Alternatives B, C and D, effects of substituting the next higher and next lower common alternative levels of riparian zone protection, and of providing only legally required (Alternative A) protection of riparian zones to preserve commercial trees on suitable forest or woodland. For the preferred alternative, the effects of substituting the alternative A and E levels.

2. For Alternative B, the effects of allocating no lands specifically for maintenance of older forest stands; or of managing the lands allocated for such protection on 250-year or longer rotation, with explicit provision for replacement; or of managing the lands allocated for timber production on 150-year rotation.

3. For Alternatives B and C, the effects of managing all lands allocated for timber production entirely under either of alternative C's partial retention approaches.

4. For Alternative C, the effects of managing the lands allocated for timber production entirely for 15 to 20 percent partial retention, but in the first decades not harvesting in the oldest 20 percent of them.

5. For Alternatives B and D, the effects of substituting the USFWS proposed spotted owl recovery plan for each alternative's older forest or spotted owl protection approach. For the preferred alternative, to provide a similar analysis, the effects of substituting the 50-11-40 rule for provision of connectivity by special management in Connectivity Areas.

6. For Alternative C, the effects of allocating the restoration and retention blocks to 35+ percent partial retention management, or of accelerating density management in those blocks in the first decade to the extent practical.

7. For Alternative D, the effects of a minimum harvest age constraint of 60 years (vis-a-vis 40 years in D in many plans).

8. For the Preferred Alternative:

   - The effects of precluding all timber harvest in old growth ecosystem areas.
   - No regeneration harvest of stands younger than cumulation of mean annual increment.
   - No constraint on minimum age of stands subject to regeneration harvest in General Forest Management Areas.
   - Foregoing planting genetically selected stock, vegetation management for release and precommericial thinning, fertilization, and stand conversion. To be analyzed for each practice individually and for all combined.

Other sensitivity analysis elements or increments may be added as deemed appropriate by a district.

Estimated effects on ASQ, together with resulting local employment and county revenues for each analysis, will be quantified. Effects on other resource attributes will be quantified only where available analytical techniques are readily applicable. Otherwise, effects will be compared to relevant environmental consequence conclusions for the basic plan alternatives.

Appendix C. Key Sections of the 1993 Record of Decision on Pacific Yew Environmental Impact Statement

The following sections on Decision, Mitigation Measures, and Monitoring are excerpted verbatim from the *Record of Decision for the Pacific Yew EIS*, dated September 1993. The remainder of the Record of Decision is incorporated by reference.

The Decision

It is our decision to select Alternative B as the Pacific yew harvest strategy for the National Forest System lands and lands administered by the Bureau of Land Management in Washington, Oregon, California, Idaho, and Montana for the next five years (1993-1997). Our selection of Alternative B is based on the analysis in the FEIS, consideration of public comments on the DEIS, and a significant reduction in demand for yew from federal lands for taxol production.

Alternative B permits harvest of any part of the Pacific yew for taxol production from timber sale units and where it might otherwise be destroyed. For the purpose of this document, timber sale units are defined as any area within a timber sale which has a silvicultural prescription for a clearcut[2], shelterwood[2], or seed tree[2] harvest method. Pacific yew may also be harvested for taxol from other areas where the yew would otherwise be destroyed by such activities as other timber harvesting, road building or other construction, a prescribed fire treatment, or similar activities. Site-specific environmental analyses are required before any yew harvest takes place.

We recognize that other parts of the yew, such as seed or scion material, may be needed for research or propagation purposes. This decision permits non-destructive harvest (where tree or shrub is not killed) of small quantities of such material for these purposes in any area where allowed by forest plans, BLM resource management plans (draft or final), or new agency resource plans.

Under this alternative, 258,000 to 386,000 pounds of dry bark and/or 686,000 to 1,030,000 pounds of dry needles from an estimated 52,000 to 78,000 yew would be available each year for harvest from National Forest System and BLM lands. These estimates are based on the number of yew per acre found in the 1992 Pacific yew inventory and the projected number of acres for timber sales described in forest plans and adjusted according to the FEIS for Management for the Northern Spotted Owl in National Forests (for Forest Service) or in draft resource management plans (for BLM). Many other decisions are currently being made that will most likely reduce the number of timber sale acres and therefore reduce the number of available yew trees and pounds of bark and needles. Under Alternative B, the production of yew from federal lands is largely dependent on the timber harvest program.

Alternative B provides for protection of some of the yew remaining after yew harvest; every sale unit would be regenerated to preharvest or prescribed levels. Special genetic reserves would not be established; however, all acres not committed to timber sales as defined above, would function as genetic reservoirs.

In summary, Alternative B emphasizes utilization of Pacific yew where it would otherwise be wasted. Production of yew would be dependent on the Forest Service and BLM timber harvest programs. It affords the highest degree of protection to the yew by virtue of allowing the lowest level of harvest (with the exception of Alternative A).

Mitigation Measures

The mitigation measures in the FEIS were developed using "An Interim Guide to the Conservation and Management of Pacific Yew, as revised April 1993"[3] as well as suggestions from the public. They were designed to protect the yew and the ecosystem. All practical means to avoid or minimize environmental harm from the selected alternative have been adopted. The mitigation measures for Alternative B follow. These apply only to areas where yew is harvested for taxol.

- If a timber sale is planned in a unique area where the only yew in the drainage is located in the sale area, then mitigation is required to assure the protection of this yew population. The purpose for this would be to protect the genetic importance of this unique population from timber sale unit locations.

- Consider including vigorous, undamaged yew trees or shrubs in the green tree reserves whenever possible.

- Harvest yew only where practical (i.e. sufficient number of stems of utilizable size).

- Where yew harvest is planned, harvest yew in the sale unit prior to the harvest of other tree species, to the extent that timber harvesters' health and safety will not be jeopardized. Preharvesting may be accomplished by decking yew logs in specific locations within the sale unit during logging operations.

- Harvest yew that is not in the residual green tree reserve.

- Do not harvest yew for the primary purpose of yew products within 75 feet slope distance from the average high-water level of a perennial stream. Where forest plans, resource management plans, or other plans or prescriptions set wider streamside buffers, these greater buffers will be adhered to.

- Site-specific prescriptions will identify logging systems, site preparation and fuels reduction treatments, and conifer regeneration plans with regard to yew survival and regeneration.

- Use one or more of the following methods to maintain or replace yew on the site at preharvest levels. Where preharvest yew densities are estimated to be greater than 50 yew plants per acre, then a minimum of 50 yew plants per acre will be prescribed in site-specific prescriptions.

1. Retain and protect as much of the residual yew (stumps, trees, shrubs, advanced regeneration remaining after harvest) as possible and practical from post-harvest activities such as slash piling and burning. Plan logging systems and slash disposal methods which favor the survival of residual yew plants and stumps, e.g., grapple piling or combined machine and burning methods or special burn prescriptions. Include retention of yew and yew stumps as one of the prescribed fire objectives in burning plans. Leave litter and down wood in those patches for seedling establishment.

   Protect yew stumps by the following.

   a. To facilitate sprouting, leave yew tree stumps at the scientifically recommended height (currently 12" high). Yew shrubs should be cut to leave a similar length from the root collar.

   b. Leave bark intact on yew stumps.

   c. Whenever possible and practical, shade yew stumps with slash or adjacent vegetation and position reserve green trees to provide shade for yew stumps and advanced yew regeneration. Shading is not normally necessary on shrub form yew; site-specific analysis may help determine how much shading is needed.

2. Encourage natural regeneration (from seed already present on site) by using any site preparation methods known to favor yew seed germination and establishment. Site-specific prescriptions will provide seed sources and desired site conditions for natural regeneration of yew and protect

concentrations of existing yew where feasible, while still meeting other management objectives. Where on-the-ground conditions preclude this, planting of yew will be prescribed.

3. Plant seedlings according to site-specific prescriptions if prescribed regeneration of yew has not been achieved and there is assurance that regeneration by other means is not occurring. Obtain rooted cuttings or seed or seedlings from sources within the local management area. Cuttings could be collected before harvest. Animal protection measures need to be considered where browsing of young yew is predicted. Refer to "An Interim Guide to the Conservation and Management of Pacific Yew," page 27, for transfer of genetic material guidelines.

- *Monitoring:* Where possible, monitor yew regeneration in conjunction with normal regeneration and other area surveys.
- *Endangered Species Act Consultation:* Yew harvest will be conducted in accordance with all conditions, restrictions, and monitoring procedures that are developed during project level Section 7 consultation required by the Endangered Species Act.
- *Seasonal Restrictions for Listed Species:* Pacific yew harvest will follow the appropriate seasonal restrictions for the affected listed species indicated during the project level (site-specific) Section 7 consultation required by the Endangered Species Act.
- *Utilization of Yew Material:* Follow current Forest Service and BLM policies for utilization of yew wood, bark, and needles. These policies may differ between Forest Service regions or national forests or between BLM districts.
- *Transfer of Yew, Administration of Permits, and Theft Prevention:* Follow current Forest Service and BLM policies for transfer of yew, administration of permits, and theft prevention.
- *Tribal Treaties:* Comply with all Native American tribal treaties and consult with tribes where yew harvest may impact trust lands.

Monitoring

Monitoring yew harvest, yew survival and regeneration, and protection of other resources will be guided by Forest Service and BLM harvest policies and requirements in forest plans and resource management plans, as well as monitoring identified in site- specific analyses. The FEIS requires that yew regeneration be monitored in conjunction with other conifer regeneration surveys (Appendix B-1 in FEIS).

[2] Harvest method terminology may change. These terms maybe replaced with their equivalents using ecosystem management or other terminology.

[3] U.S. Department of Agriculture, Forest Service, 1992. An Interim Guide to the Conservation and Management of the Pacific Yew. Pacific Northwest Region. 78 p.

Appendix D. Description of the Draft RMP/ EIS Preferred Alternative

Summary of Major Changes

- This appendix describes the Preferred Alternative as included in the Draft RMP/EIS. It is included for reader convenience in determining changes between the Draft and Proposed RMP.
- Table and map numbers included in this appendix are those from the DRMP, not as described in the PRMP.
- The PA map has not been reprinted.

Preferred Alternative

The goal and objectives of the Preferred Alternative, which were developed after the common alternatives were formulated, were described in Appendix IIL of the Draft RMP.

Water Quality and Riparian Areas

Riparian Management Areas (RMAs) would be established with the following expected average widths on each side of perennial streams and other waters:

third order streams	150 feet
fourth order streams	150 feet
fifth order streams	210 feet
sixth order and larger streams	240 feet
other waters (such as lakes)	150 feet

RMAs averaging 75 feet would also be established on each side of approximately 93 miles of fish-bearing or perennial first and second order streams during the expected 10-year life of the plan. Actual RMA widths would be determined by on-the-ground riparian vegetation, terrain, and stream characteristics.

Some experimental harvesting of hardwoods (primarily red alder) would occur within RMAs where vegetative succession has been altered by previous management activity. The objective of such experimental harvests is to restore the RMA to a natural condition and increase the coniferous species composition for the improvement of fisheries habitat and water quality.

Old-Growth and Mature Forests

Forest lands in the TPCC categories of Nonsuitable Woodland and Suitable Woodland would not be subject to planned harvest. Some experimental harvest would be conducted within these categories, limited to the objective of benefiting other resource values (e.g., to create forage areas for big game species where deficient).

Also not available for planned harvest would be other forest lands allocated for riparian zone protection in RMAs, recreation sites, RNAs and most ACECs, and threatened and endangered species recovery areas where timber harvest is prohibited. These forest lands total 59,000 acres, including 17,100 acres which are currently old growth and 17,000 acres of mature forest.

An additional 82,900 acres of forest land would be managed and maintained in a system of old-growth emphasis areas (OGEAs) to:

- Provide habitat for old-growth dependent species.
- Forestall the listing of additional old-growth dependent species and encourage the delisting of species currently listed as threatened or endangered.
- Perpetuate the natural forests by retaining components of all seral stages.
- Maintain management options for future generations.
- Provide for biological diversity at the western Oregon landscape level.
- Provide some forest products for community stability.

Of this OGEA acreage, 21,000 acres are currently old growth and 15,300 acres are mature forest.

An additional 26,500 acres of forest land would be managed and maintained as connectivity acres (CAs) to:

- Provide for dispersal and foraging habitat for those species requiring old-growth or mature habitat.
- Provide connectivity and avoid genetic isolation for old-growth dependent species.
- Provide some timber for community stability while developing stands that have old-growth characteristics as rapidly as possible.
- Encourage species richness and biological diversity by managing habitat for all species.
- Forestall the listing of additional species and encourage the de-listing of species currently listed as threatened or endangered.

Of the CA acreage, 3,700 acres are currently old-growth and 6,100 acres are mature forest.

The location of the OGEAs and CAs, as shown on the Preferred Alternative Map, have been coordinated with adjacent BLM districts and adjoining national forests to provide habitat and connectivity for old-growth/mature forest dependent species on a western Oregon landscape basis.

In addition, 80 to 100 acres of habitat around occupied northern spotted owl nest sites would be protected until the site is no longer occupied and reoccupancy is considered unlikely.

Timber

Approximately 137,700 acres in the General Forest Management Areas (GFMA) would be available for unconstrained timber production, and 112,200 acres would be available for restricted timber production. See Table 2-1.

Regeneration harvest of predominantly conifer stands would be conducted under one of three broad prescription concepts. Within the 82,900 acres of OGEAs, stands would be managed on a 300-year rotation. Certain stands would receive density management thinnings to hasten the development of older forest characteristics. Regeneration harvests would be deferred for 80 years to enable gaining knowledge from adaptive management on the types of timber harvesting that will develop and maintain old-growth characteristics and to assure that no stands would be younger than 80 years of age. Regeneration harvest prescriptions would be designed to create openings approximately 10 acres in size, while retaining an average of 6 wildlife trees per acre.

Within the 26,500 acres of CAs, stands would be managed on a 150-year rotation. Certain stands would receive density management thinnings to hasten the development of older forest characteristics, to provide an output of timber during the rotation, and to promote development of larger, higher quality trees at the time of regeneration harvest. Regeneration harvesting prescriptions would be designed to create openings which meet the Oregon Forest Practices Act (up to 120 acres in size), while retaining an average of 12 wildlife trees per acre. Within the CAs, the objective would be to have 50 percent of the area at least 80 years of age or older.

On approximately 137,700 acres in the GFMA not described above, management would emphasize timber production for community stability. Regeneration harvest prescriptions would be designed to create openings consistent with the Oregon Forest Practices Act, while retaining an average of six wildlife trees per acre. No stands younger than age class 60 would be planned for regeneration harvest, with the long-term objective being to harvest stands at the culmination of mean annual increment (65-75 years).

Harvest techniques utilizing cable or aerial systems, or designated skid trails that minimize impacts to soil and residual vegetation, would be used. New roads would be constructed to the lowest practical standards and density consistent with resource protection and multiple use values. Road management, including closures, would be applied to reflect multiple use needs.

Brush and hardwood conversion would occur within the next 20 years in each of the areas described above.

Prescribed fire would be the favored tool used for site preparation; however, all available tools would be utilized based on site-specific prescriptions.

Artificial regeneration following regeneration harvest would be conducted to minimize regeneration lag. Planting stock of commercial species would be selected from superior tree seed collected from seed orchards developed from wild trees, or from tree seed collected from wild trees growing within the same seed zone and elevation levels. Mixed species would be used to maintain indigenous species diversity. Seedling protection would be utilized as determined by site-specific silvicultural prescriptions.

Plantation maintenance and release treatments would also be used in all areas. While the primary goal of these treatments is to promote survival and growth of desired coniferous species, a component of native hardwoods resembling the level occurring before harvesting would be retained to enhance biological diversity. When the treatment of existing clearcut units is no longer necessary, aerial application of herbicides would decline. All Pacific yew within the units would be retained.

Precommercial thinning would be conducted on approximately 85 percent of the GFMA, CAs, and OGEAs.

Fertilization would be used to supplement natural nitrogen fixation, enhance growth, and hasten development of structure and large trees. Within the GFMA, three applications would be utilized on site class II, III, IV, and V lands primarily to increase timber production for community stability. Within the CAs and OGEAs, two or three applications on site class III and IV lands would be utilized to hasten the development of large trees.

Approximately 56 percent of the forest lands would receive density management thinnings. One thinning would be conducted within the GFMA, occurring approximately 20 years prior to regeneration harvest. As the CAs and OGEAs will attain a greater age prior to regeneration harvest, two or three density management thinning operations would be conducted. The objectives for density management thinning within CAs and OGEAs would be to provide products for community stability and to develop stands having mature and old-growth characteristics as rapidly as possible.

Pruning would be conducted on approximately 25 percent of harvested acres in the GFMA, with the objective of developing a higher valued product for economic benefits to local communities. Pruning would normally be limited to the lower 20 feet of selected trees, and would occur between 20 and 30 years of age. Pruning is a high cost item, which may not be economically justifiable in stands which will attain an older age.

The following attributes of the Preferred Alternative were displayed in Appendix II-M of the Draft RMP: silvicultural systems used, planned timber harvest by decade, board foot/cubic foot ratio by decade, harvest by allocation/prescription, harvest by silvicultural practice, and planned stand treatments.

Special Status Species Habitat

No activities would be undertaken or permitted that would jeopardize populations of federally listed threatened or endangered plants or animals, or species officially proposed for such listing.

In addition to protecting federally listed and proposed threatened or endangered species, habitats of federal candidate, state listed and Bureau sensitive species would be managed to enhance them where appropriate and, in all cases, so BLM would avoid contributing to the need to list such species. Field surveys would focus on any of these species suspected to be present in an area proposed for a specific site-disturbing activity. If such species are identified, their habitat would be protected. See Table 2-5 in the Draft RMP for a list of special status species and their protection by alternative.

Additionally, habitat management plans would be completed for listed species in accordance with recovery plans, and for other priority species based on need.

Other Wildlife Habitat

Timber harvest would be designed to retain, where available, enough snags and dead and down material to meet Old-Growth Definition Task Group standards, which vary according to plant community series. Within the OGEAs, the goal would be to meet the standards for the Douglas-fir on western hemlock sites (retention of 500 cubic feet per acre of both snags and down logs). Within the CAs, the goal would be to meet the standards for the Douglas-fir on mixed evergreen sites (retention of 250 cubic feet per acre of down logs and 100 cubic feet per acre in snags). Within the GFMA, the goal would be to meet the Oregon Forest Practices Act requirements (retention of 2 logs per acre larger than 12 inches in diameter and 16 feet in length, one of which must be conifer). Emphasis would be placed on retaining Class 1 logs that are hollow or rotten, and Class 2 and 3 logs greater than 20 inches in diameter.

Wildlife trees retained while conducting final harvests would include 6 trees per acre in OGEAs, 12 trees per acre in CAs, and 6 trees per acre in GFMAs. The distribution of retained trees would vary from the retention of 2 trees per acre distributed over the harvested area and the remainder adjacent to riparian management areas or first and second order draws, to 12 trees per acre distributed over the harvested areas either singularly or in groups.

Timber harvesting would also be designed to create foraging habitat for big game species where such habitat is lacking. Additionally, some experimental harvesting would be conducted in riparian areas with the goal of reverting current hardwood stands back to predominately coniferous stands for the improvement of fisheries habitat.

Special habitats considered to be significant by IDT review would be buffered by 100 to 200 feet from surface disturbance and harvest of timber.

In addition to these planned actions, the district would implement a Fish and Wildlife 2000 plan developed in line with the BLM National and State Fish and Wildlife 2000 Plan objectives to adequately manage for wildlife resources. These would include inventories, monitoring, and Habitat Management Plans for wildlife and fisheries, as more specifically described below:

Wildlife

- Dean Creek Elk Viewing area would be managed as a Watchable Wildlife area for the recreational and educational benefit and enjoyment of the public.

- A portion of New River would be managed as an ACEC to protect habitat for a number of special status species and important terrestrial and wetland habitats and to provide low impact, passive recreation opportunities for the public associated with these habitats.

- A District Big Game management plan would be established to meet road management and forage needs for elk, deer, and bear. On the average, 1.5 miles of road would remain open per section of BLM land; up to 50 percent of the acres final harvested would be forage seeded each year; permanent forage plots of 3-5 acres would be scattered throughout the three management areas.

- As funding and priorities dictate, inventories and plans would be developed for upland game birds, non-game (neo-tropical) birds, raptors, waterfowl, and other watchable wildlife.

Fish

- Emphasis would be placed on completing a district-wide stream inventory of all fish and riparian habitat and on rehabilitating areas to enhance the natural runs of anadromous and resident fish. Possible rehabilitation measures could include fish passage improvements, instream structures using boulders and log placement to create spawning and rearing habitat, placement of fine and coarse materials for overwintering habitat, and riparian rehabilitation to establish and release existing coniferous trees. All projects would be monitored to determine values for fish/wildlife.

- Land exchanges with private entities would be encouraged in key drainages to block up sections of streams/riparian areas to facilitate management and to help meet habitat enhancement goals. Key drainages include but are not limited to the following: Umpqua, Smith, Coos, Coquille, and New River.

Interagency Coordination/Public Outreach

- Many of the proposals would include partnerships with public and private groups and organizations to accomplish many of the goals and objectives of the Fish and Wildlife 2000 plan. The district would continue to work with public agencies including the Oregon Department of Fish and Wildlife and the U.S. Fish and Wildlife Service. Working relations would continue with Rocky Mountain Elk Foundation, Ducks Unlimited, Oregon Coastal Wetlands Joint Venture, and with organizations such as the Defenders of Wildlife, The Nature Conservancy, and the Audubon Society.

Special Areas

- New River ACEC, Cherry Creek RNA, and Powers Environmental Education area would be retained. Cherry Creek would be designated as an RNA/ACEC. Nine additional areas would be designated as ACECs (Wassen Creek, North Spit, North Fork Coquille River, Tioga Creek, China Wall, Upper Rock Creek, North Fork Hunter Creek, Hunter Creek Bog, and the North Fork Chetco River). Management plans describing permissible activities and providing for special status species would be prepared for each ACEC. See Table 2-6 in the Draft RMP.

Recreation

- The following existing BLM recreation sites and areas would continue to be managed and maintained for recreation use and development by BLM, some in partnership with other organizations:
  - The Loon Lake/East Shore area would be designated as a SRMA.
  - The Dean Creek Elk Viewing Area and BLM-administered lands along New River would be designated as SRMAs with emphasis on managing these areas for watchable wildlife, environmental interpretation, and related low impact recreational activities. Recreational facilities and activities at New River would be compatible with the basic goals of the New River ACEC Management Plan.
  - Seven existing recreation sites (Smith River Falls, Vincent Creek, Park Creek, Big Tree, Burnt Mountain Cabin, Bear Creek, and Palmer Butte) and trails would continue to be managed and maintained for day-use and overnight recreation use.

  - The North Spit Boat Ramp would be managed to provide boating, fishing, and wind surfing access to the north shore of Coos Bay.

- In addition to the existing developed areas and sites, three new SRMAs would be established and managed for recreational use and development as follows:
  - Coos Bay Shorelands, featuring two areas—the North Spit of Coos Bay and Coos Head. Both areas currently provide opportunities for sightseeing, whale watching, storm watching, and photography among other undeveloped recreational uses. In addition, the North Spit area provides opportunities for wildlife observation, fishing, crabbing, clam digging, camping, wind surfing, boating, horseback riding, hiking, limited OHV use, and other dispersed activities.
  - Gregory Point, featuring an interagency cultural heritage interpretive center with potential public access to the Cape Arago Lighthouse. This site provides a rich array of cultural, historic, scenic, and biological values suitable for cultural and natural history interpretation/education, Native American cultural appreciation, nature studies, photography, and wildlife observation.
  - Sixes River, featuring camping, picnicking, swimming, fishing, floating, hiking, and recreational gold panning and dredging. Recreation development opportunities include trails, historic site interpretation, construction of two boat ramps, and improving existing facilities.

- In addition to the sites and areas listed above, an additional 21 sites would be managed for recreational use and development, or in a manner that would protect future options for development of these high potential sites, trails, and facilities. These include:
  - Six potential recreation sites: Smith River Log Dump day-use site, Umpqua Lighthouse site, Big Bend site, Tioga Basin site, McKinley Camp site, and Lower Four Mile day-use site.
  - Seven potential boat ramps: Smith River, Vincent Creek, Fawn Creek, East Fairview, Rock Prairie, and two on Sixes River.
  - Eight trails totaling approximately 34 miles in length: Kentucky Creek/Roman Nose, Wassen Creek, McKinley Camp, Brummit Fir, Upper Rock Creek, Camp Myrtlewood, North Fork Hunter Creek, and Hunter Creek Bog.

No timber sales other than salvage sales of dead and dying timber would be made in these sites and areas during the life of the plan. An exception would be made in the event a natural catastrophe (e.g., fire or windstorm) destroys the high value recreation potential of an area.

The district would consider expanding the recreation program to additional BLM-administered lands where warranted by increased recreation needs and demands, or by opportunities to enhance local economic vitality.

Additionally, the district would attempt to acquire lands or an easement for public access to lands adjacent to the Loon Lake SRMA to permit expansion of existing facilities and development of trails. The district would also attempt to acquire lands adjacent to the Dean Creek Elk Viewing Area, Coos Bay Shorelands and New River SRMAs to improve manageability of these sites for wildlife viewing and other low impact recreational uses. Acquisition of South Sisters Rock would be pursued to provide public access for day-use recreation including picnicking, wildlife viewing, nature study and photography. Additional acquisitions to enhance recreation resource opportunities would be identified and evaluated on a case-by-case basis through activity level planning.

See Table 2-7 in the Draft RMP for a list of existing and potential sites to be managed for recreation.

Where appropriate and compatible with other resource management objectives, BLM would work with the private sector and not-for-profit organizations to develop suitable sites and provide recreation facilities, management, and services on BLM-administered lands. Recreation lease opportunities or proposals would be considered on a case-by-case basis to provide for, or enhance, recreational use and enjoyment of public lands, and/or stimulate investment and economic diversity in the planning area. Leases would be awarded on a competitive bid basis.

A total of 155 miles of district roads would be designated and managed as Back Country Byways, a component of the National Scenic Byway System. This would include:

- 57 miles of the Smith River Road (BLM and Douglas County).
- 7 miles of the South Sisters and East and West Oxbow roads.
- 28 miles of BLM and Douglas County roads from Mill Creek on Highway 38 to Tyee on the Umpqua River.
- 63 miles of the Coos Bay Wagon Road, and Myrtle Point to Sitkum roads.

Other roads could be added to the system and would be considered on a case-by-case basis as the need or opportunity arises.

Off-highway vehicle use and motorized access would be limited to designated roads and trails throughout most of the district. Between State Highways 38 and 42, a goal of between 1.1 and 2.9 miles of open road per section (square mile) would be implemented on BLM-managed lands. On most of the remainder of the district, the goal would be to maintain a maximum of 2.9 miles of open road per section; the current average is 2.3 miles of road per section on these latter lands. Accordingly, between approximately 830 and 1,360 miles of existing roads would be designated as open, and between approximately 205 and 735 miles as closed to vehicle use. In addition, approximately 2,000 acres (see Management Guidance Common to All Alternatives for list of areas) would be designated as closed year-round to vehicle use other than for administrative purposes or commercial commodity extraction. Closed roads would be available to non-motorized access for recreational pursuits including hiking, horseback riding, mountain biking and walk-in hunting use by the public. Where possible, closed roads would be linked by trails to provide a network of non-motorized recreational opportunities. New roads developed for timber harvest or other management actions would be designated as either open or closed to public motorized access in accordance with the goals described above.

See Table 2-1 for a comparison of off-highway vehicle designations and road closures by alternative.

Wild and Scenic Rivers

No rivers would be found suitable for designation as wild, scenic, or recreational rivers. Appendix II-N of the Draft RMP contained Wild and Scenic River suitability assessments for all river segments studied.

Visual Resources

Lands within existing boundaries designated by Congress for exclusive management (Squaw Island and Cherry Creek RNA) and the North Sisters Rocks and Zwagg Island Wilderness Study Areas would be managed as VRM Class I. Available forest land adjacent (within 0.25 mile) to developed recreation sites, state and federal highways, and state scenic waterways would be managed as inventoried. These forest lands would be available for the restricted management of forest products. All other available forest land would be managed as VRM Class IV, except as noted under Rural Interface Area Management. The remaining lands (non-forest, non suitable woodland, suitable woodland-low site, and lands allocated for uses other than timber production) would be managed as inventoried.

See Table 2-1 for acres of each class by alternative.

Land Tenure

Exchange of BLM-administered lands would be made to acquire lands which would enhance management opportunities to benefit one or more resource values. Sale of O&C and CBWR lands which are not available commercial forest land, and PD lands would be considered if they meet any of the criteria of FLPMA Section 203(a). R&PP leases would be considered in all zones to provide for public facilities or services.

BLM-administered lands on the North Spit of Coos Bay within Coos County Comprehensive Plan zoning districts 3E-WD, 4CS, and 6WD could be offered for exchange or lease to accommodate local economic expansion and industrial development. BLM would acquire lands in zoning districts 2CS to benefit recreation and wildlife, in zoning district 5A-NS to benefit wildlife values, or other lands to benefit other resource values.

O&C and CBWR lands would not be exchanged to acquire inholdings in OGEAs to enhance owl habitat.

Energy and Minerals

Leasable minerals (oil and gas, geothermal resources) would continue to be made available on almost all land where the mineral estate is administered by BLM. Most lands would also remain open to location under the mining laws and to sale of salable minerals.

See Tables 2-8, 2-9 and 2-10 in the Draft RMP for comparison of mineral restrictions by alternative.

Rural Interface Areas

Approximately 2,100 acres of BLM-administered lands within 0.25 miles of private lands in rural interface areas (zoned 1 to 5-acre lots) would be managed to lessen the impacts of intensive forest management practices. Forest management practices within these rural interface areas would be constrained, where feasible and consistent with sustained yield timber management as follows:

- VRM Class III guidelines would be utilized.
- Hand application rather than aerial application of herbicides and pesticides.
- Broadcast burning would be utilized; however, more hand piling of slash for burning would be utilized than in non-rural interface areas.
- Additional buffers would be provided on streams utilized for domestic water sources.

See Table 2-11 in the Draft RMP for comparison of identified rural interface areas by alternative.

Appendix E. Comparison Tables for Alternatives A Through E

- This appendix contains the tables comparing the common alternatives included in the PRMP/EIS.
- Table numbers included in this appendix are from the Draft RMP.

Table 2-4. Fire Management Categories

Resource Values	Prescribed Fire		Wildfire Control		Management
	Fire Use	Fuel Treatment	Intensive	Conditional	Restriction[1]
Intensive Forest Management Areas	X	X	X		1,3
Progeny Test Sites		X	X		1
Special Fire Concern Areas					
ACECs	X	X	X		1,3,4
RNAs		X		X	2,3,4
Recreation Sites/Areas		X	X		1
Old-growth Retention (R&R Blocks, OGEAs, CAs)		X		X	1,3,4
Riparian Areas		X		X	1,3,4
T&E Species Areas (Eagle Nests, NSO Areas)		X		X	1,3,4
Rural Interface Areas	X	X	X		1
Archaeological Sites	X	X	X	X	2
VRM Class II Areas		X	X	X	1,3
TPCC Withdrawals		X		X	1,4

[1] 1 = Tractor Fire Line Construction Restrictions
2 = Tractor Fire Line Construction Prohibited
3 = Air Tanker Restrictions
4 = Snag Falling Restrictions

Table 2-5. Special Status Species Habitat Protection by Alternative

Species	Action	A	B	C	D	E
Bald Eagle	Provide a buffer around known and future nest sites.	440 yd. radius buffer.	Same as A.	Same as A.	Same as A.	Same as A.
	Provide and protect snags.	None.	Protect all snags within 0.25 mile of nest and roost sites.	Same as B.	Protect snags within 550 yards of nest and roost sites.	Same as D.
	Provision for future population expansion.	None.	None.	Manage to retain old-growth characteristics, including large trees, snags, and at least 50% canopy closure on 10% of the potential habitat.	Same as C except on 20% of potential habitat.	Same as C except on 30% of potential habitat.
	Land tenure.	None.	None.	Obtain through exchange or other mutual agreement easements or ownership of private lands within 0.5 mile of existing or potential habitat that aids in meeting recovery goals.	Same as C.	Same as C.

Table 2-5. Special Status Species Habitat Protection by Alternative (Continued)

Species	Action	A	B	C	D	E
Bald Eagle	Potential habitat.	None.	None.	Withdraw potential habitat from mineral entry if necessary to achieve desired habitat composition.	Same as C.	Same as C.
	Fuels management.	None.	None.	Manage immediately adjacent lands to reduce the fire hazard on nesting areas.	Same as C.	Same as C.
Peregrine Falcon	Provide a buffer around known and future activity centers.	Provide a buffer up to a 5-acre maximum per site.	Provide a buffer up to a 15-acre maximum per site.	Provide a buffer up to a 30-acre maximum per site.	Provide a buffer up to a 40-acre maximum per site.	Provide a buffer up to a 100-acre maximum per site.
Aleutian Canada Goose	Habitat at New River	Habitat protected at New River.	Same as A.	Acquire additional habitat in New River area.	Same as C.	Same as C.
Northern Spotted Owl	Protection of existing and future habitat.	Protect habitat where it would not diminish commercial use, i.e., on lands not included in the intensive timber production base.	Same as A except on PD lands, where spotted owl habitat is of equal or greater value than for timber production. Habitat also provided in habitat diversity blocks (18,500 ac.).	Same as A. Additional protection provided in old-growth restoration and retention blocks (38,100 ac.).	Same as A. Additional protection provided in habitat conservation areas as established by the Interagency Scientific Committee (ISC) Report.	Same as A. Additional protection provided by not harvesting stands over 150 years in age (41,150 ac.).

Table 2-5. Special Status Species Habitat Protection by Alternative (Continued)

Species	Action	A	B	C	D	E
Northern Spotted Owl	Provide for dispersal, foraging areas.	None except for Riparian Management Areas (RMAs)	Same as A except wider RMAs on third order and larger streams.	Same as B. Retention of 17.5% and 40% of basal area would also provide habitat on 212,600 acres.	Same as B. Additional dispersal habitat provided by ISC 50-11-40 requirements.	Same as B. Additional habitat provided by buffering first and second order streams.
	Land Tenure.	None.	Exchange of PD lands could be made where it would benefit the owl.	Exchanges could be made to contribute to conservation of biological diversity.	Exchanges could be made to block up holdings in the HCAs.	Exchanges could be made where spotted owl habitat is deficient.
	Mineral restrictions.	None.	None.	Mineral restrictions within old-growth restoration and retention areas.	Mineral restrictions within HCAs.	Mineral restrictions around known nest sites.
Townsend's Big-eared Bat	Protection of habitat around any discovered habitat sites.	100 foot buffer around any discovered sites.	Same as A.	3-5 acre buffer as appropriate around any discovered site.	Same as C.	Up to 10-acre buffer per site.
Marbled Murrelet	Protection of habitat.	Provide seasonal restrictions around nesting and suspected nesting habitat.	40-acre minimum blocks reserved for nesting and suspected nesting habitat.	Habitat areas protected including known and suspected nesting areas, especially within 30 miles of coast.	Same as C.	Most current habitat protected.
Snowy Plover	Protection of habitat on North Spit and New River.	Nesting habitat protected at North Spit and New River.	Same as A.	Habitat expansion at New River and on North Spit.	Same as C.	Same as C.
White-footed Vole	Treat same as Bureau Sensitive plants.	Treat same as Bureau Sensitive plants.	Same as A.	Same as A.	Same as A.	Same as A.

Table 2-5. Special Status Species Habitat Protection by Alternative (Continued)

Species	Action	A	B	C	D	E
Special Status Plants (see Table 2-1)						
Amphibians, reptiles, fur bearers, riparian invertebrates.	Protection of habitat.	75 foot buffer on streams and other waters.	75-160 foot stream buffers; 100 foot buffer around other waters.	105-240 foot buffers; 150 foot buffer around other waters.	60-320 foot stream buffers; 200 foot buffer around other waters.	50-320 foot stream buffers; 400 foot buffer around other waters.
Big Game	Seed harvested acres to legumes and/or grasses.	Seed 10% of harvested acres.	Same as A.	Seed 50% of harvested acres.	Seed 75% of harvested acres.	Seed 100% of harvested acres.
	Clearcuts.	Meet State FPA requirements for specific management objectives.	Same as A.	Small clearcuts, averaging 20 acres (10-40 acre range)	Same as C.	Same as C.
	Create forage openings in closed canopy acres.	None.	1 to 3 acres.	3 to 5 acres.	Same as C.	5 to 10 acres.
	Visual barrier along roads in thinning areas.	None.	20 feet.	25 feet.	30 feet.	35 feet.
	Average density (miles) of roads/ section to remain open.	No limitation.	5 miles.	2 miles.	1.5 miles.	1 mile.
	Land acquisition.	None.	None.	Acquire selected 20-40 acre parcels of private lands in R/R blocks to manage for big game forage.	Acquire selected 20-40 acre parcels of private lands in HCAs to manage for big game forage.	Same as C.

Table 2-5. Special Status Species Habitat Protection by Alternative (Continued)

Species	Action	A	B	C	D	E
Osprey/Great Blue Heron	Provide snags or green trees for perch/nest sites.	None	Every 0.25 mile along 4th order or larger stream.	Same as B.	Same as B.	Same as B.
Osprey	Provide a buffer around nest sites.	None.	Up to a 1-acre maximum.	Up to a 2-acre maximum.	Up to a 5-acre maximum.	Same as D.
Blue Heron	Provide a buffer around heron colonies.	None.	50 yard buffer.	100 yard buffer.	200 yard buffer.	300 yard buffer.
Goshawks and other accipiters	Provide a buffer around activity centers.	None.	Up to a 10-acre maximum on PD lands only.	Up to a 10-acre maximum.	Up to a 30-acre maximum.	Same as D.
Red-tail Hawk and other raptors	Provide a buffer around known and future activity centers.	None.	Up to a 1-acre maximum.	Up to a 5-acre maximum.	Same as C.	Same as C.
Dominant Woodpeckers and other cavity dwellers	Percent of the optimum population potential to manage for.	None.	40%.	60%.	60%.	60%.
Resident and Anadromous Fish	Buffer of streams.	75 foot buffer on streams and other waters.	75-160 foot stream buffers; 100 foot buffer around other waters.	105-240 foot stream buffers; 150 foot stream buffer around other waters.	60-320 foot stream buffers; 200 foot buffer around other waters.	50-320 foot stream buffers; 400 foot buffer around other waters.

Table 2-5. Special Status Species Habitat Protection by Alternative (Continued)

Species	Action	A	B	C	D	E
Resident and Anadromous Fish	Acquisition of key habitats.	No acquisition.	No acquisition.	Acquire key areas of private land or conservation easements in key drainages.	Same as C.	Acquire private lands in key drainages.
	Habitat enhancement.	Minimal stream habitat enhancement.	Same as A.	Major stream habitat enhancement projects to benefit fisheries and aquatic ecosystems.	Same as C.	Same as C.
	Riparian enhancement; conversion of hardwood.	Convert minimal acreage per year.	Same as A.	Convert up to 30% of hardwood areas in key drainages/ decade.	Same as C.	Same as C.

Table 2-6. Existing and Potential ACEC and other Special Areas

	Management by Alternative					
Area Name [1]	**NA**	**A**	**B**	**C**	**D**	**E**
Cherry Cr. RNA/ACEC Existing Total Acres - 570 Acres CFL - 430	Designated as RNA. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO. Closed to salable minerals.	Designated as RNA/ ACEC. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO. Closed to salable minerals.	Same as A	Same as A	Same as A	Same as A
New River ACEC Existing Total Acres - 883 Acres CFL - 0	Designated. Not available for timber harvest. Closed to OHV use. Withdrawn from mineral entry. Mineral leasing subject to NSO.	Same as NA	Same as NA	Same as NA	Same as NA	Same as NA
Powers Environmental Education Area Existing Total Acres - 70 Acres CFL - 68	Designated. Not available for timber harvest. Managed as a component of the mid-age/old-growth system. Limited OHV use.	Not designated. Available for timber harvest. Open to OHV use.	Not designated. Managed as a retention block for corridor. Not available for timber harvest. Closed to OHV use.	Designated. Not available for timber harvest. Closed to OHV use.	Same as C	Same as C

Table 2-6. Existing and Potential ACEC and other Special Areas (Continued)

		Management by Alternative				
Area Name [1]	NA	A	B	C	D	E
Wassen Creek Potential RNA/ACEC Total Acres - 3,440 Acres CFL - 2,450	Not designated. CFL available for timber harvest. Open to OHV use.	Same as NA	Not designated. Portions managed as retention blocks in corridor. Not available for timber harvest. Remainder of CFL available for harvest. Open to OHV use.	Designated as RNA/ACEC. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO.	Same as C	Designated as ACEC only. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO.
North Spit Potential ACEC Total Acres - 580 Acres CFL - 0	Not designated. Limited OHV use.	Same as NA	Designated. Limited OHV use. Mineral leasing subject to NSO. Withdrawn from mineral entry.	Same as B	Same as B	Same as B
North Fk. Coquille River Potential ACEC Total Acres - 290 Acres CFL - 186	Not designated. CFL available for timber harvest. Open to OHV use.	Same as NA	Same as NA	Same as NA	Designated. Not available for timber harvest. Limited OHV use. Mineral leasing subject to NSO.	Same as D
Tioga Creek Potential ACEC Total acres - 40 Acres CFL - 38	Not designated. Available for timber harvest. Open to OHV use.	Same as NA	Same as NA	Same as NA	Designated. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO.	Same as D

Table 2-6. Existing and Potential ACEC and other Special Areas (Continued)

Area Name [1]	NA	Management by Alternative A	B	C	D	E
China Wall Potential ACEC Total acres - 240 Acres CFL - 110	Not designated. CFL available for timber harvest. Open to OHV use.	Same as NA	Designate non-CFL as ACEC. CFL available for timber harvest. Open/closed to OHV use.	Same as B	Designate. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO.	Same as D
North Fork Hunter Creek Potential RNA/ACEC Total acres -1,730 Acres CFL - 840	Not designated. CFL available for timber harvest. Open to OHV use.	Same as NA	Designated as RNA/ ACEC. Not available for timber harvest. OHV use limited. Mineral leasing subject to NSO.	Same as B	Same as B	Designated as ACEC only. Not available for timber harvest. OHV use limited. Mineral leasing subject to NSO.
Hunter Creek Bog Potential RNA/ ACEC Total Acres - 570 Acres CFL - 50	Not designated. CFL available for timber harvest. Open to OHV use.	Same as NA	Designated as RNA/ACEC. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO.	Same as B	Same as B	Designated as ACEC only. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO.
North Fork Chetco River Potential RNA/ACEC Total acres - 600 Acres CFL - 464	Not designated. CFL available for timber harvest. Open to OHV use.	Same as NA	Same as NA	Designated as RNA/ACEC.	Same as C	Designated as ACEC only. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO.

Table 2-6. Existing and Potential ACEC and other Special Areas (Continued)

	Management by Alternative					
Area Name [1]	**NA**	**A**	**B**	**C**	**D**	**E**
Upper Rock Creek Potential RNA/ACEC Total acres - 460 Acres CFL - 440	Not designated. Not available for timber harvest. Managed as a component of the mid-age/old-growth system. Open to OHV use.	Same as NA	Not designated. Not available for timber harvest. Old-growth retention block in corridor. Open to OHV use. Mineral leasing subject to NSO.	Not designated. Not available for timber harvest. Old-growth restoration, retention block. Open to OHV use. Mineral leasing subjec to NSO.	Designated as RNA/ ACEC. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO.	Designated as ACEC only. Not available for timber harvest. Closed to OHV use. Mineral leasing subject to NSO.

[1] Descriptions are provided in Chapter 3 and Appendix 1-SA-1

Abbreviations used in this table:

OHV = Off highway vehicle
NSO = No surface occupancy
CFL = Commercial forest land

Table 2-7. Recreation Sites and Trails (Built and) Maintained by Alternative

Name	E/P	NA	A	B	C	D	E
Smith River Falls	E	D	N	D	D	D	D
Vincent Creek	E	D	N	D	D	D	D
Dean Creek Elk Viewing Area	E	N	D	D	D	D	D
Kentucky Creek/ Roman Nose Trail	P	N	N	N	D	D	D
Smith River Log Dump Day Use	P	N	N	N	D	D	D
Fawn Creek	P	N	N	N	D	D	D
Umpqua Lighthouse	P	N	N	D	D	D	D
Big Bend Site	P	D	N	N	D	D	D
Wassen Creek Trail	P	N	N	N	D	D	D
Loon Lake	E	D	D	D	D	D	D
Loon Lake Expansion	P	N	N	N	N	D	D
East Shore	E	D	D	D	D	D	D
Camp Creek Site	P	N	N	N	N	D	D
Smith River Boat Ramp	P	N	N	N	D	D	D
Sawyer Creek Boat Ramp	P	N	N	N	N	D	D
Vincent Creek Boat Ramp	P	N	N	N	N	D	D

Table 2-7. Recreation Sites and Trails (Built and) Maintained by Alternative (Continued)

Name	E/P	NA	A	B	C	D	E
Fawn Creek Boat Ramp	P	N	N	N	N	D	D
Laverne Park[1]	E	D	D	D	D	D	D
Laverne Park R&PP[1]	E	D	D	D	D	D	D
Rock Prairie Park[1]	P	D	D	D	D	D	D
Middle Creek Park[1]	P	D	D	D	D	D	D
Judge Hamilton Park[1]	P	D	D	D	D	D	D
Park Creek	E	D	N	D	D	D	D
Big Tree	E	D	N	D	D	D	D
Burnt Mountain Cabin	E	D	N	N	D	D	D
Coos Bay Shorelands	P	N	N	D	D	D	D
North Spit Boat Ramp	P	N	N	D	D	D	D
Coos Head	P	N	N	D	D	D	D
Gregory Point	P	N	N	D	D	D	D
Blue Ridge Rifle Range	P	N	N	N	N	D	D
Tioga Basin Site	P	N	N	N	D	D	D
McKinley Camp Site/Trail	P	N	N	N	D	D	D
North Fork Coquille River Trail	P	N	N	N	N	D	D

Table 2-7. Recreation Sites and Trails (Built and) Maintained by Alternative (Continued)

Name	E/P	NA	A	B	C	D	E
Vaughn Creek Site/Trail	P	N	N	N	N	D	D
Brummit Creek Trail	P	N	N	N	N	D	D
Middle Creek Falls	P	N	N	N	N	D	D
East Fairview Boat Ramp	P	N	N	N	N	D	D
Rock Prairie Boat Ramp	P	N	N	N	N	D	D
Frona Park[1]	E	D	D	D	D	D	D
Bear Creek	E	D	D	D	D	D	D
Sixes River	E	D	D	D	D	D	D
Palmer Butte	E	D	N	D	D	D	D
New River	P	N	D	D	D	D	D
Lower Four Mile Day Use Site	P	N	N	D	D	D	D
Bear Creek-Panther Ridge Trail	P	N	N	D	D	D	D
Upper Rock Creek Trail	P	N	N	N	N	D	D
Camp Myrtlewood Trail	P	N	N	N	D	D	D
No. Fk. Hunter Cr. Trail	P	N	N	D	D	D	D
Hunter Creek Bog Trail	P	N	N	D	D	D	D

Table 2-7. Recreation Sites and Trails (Built and) Maintained by Alternative (Continued)

Name	E/P	NA	A	B	C	D	E
South Sister Rock Site	P	N	N	N	N	D	D
Elk Creek Boat Ramp	P	N	N	N	N	D	D
Gold Brick Boat Ramp	P	N	N	N	N	D	D
Frona Boat Ramp	P	N	N	N	N	D	D
Sixes River Boat Ramp (2)	P	N	N	D	D	D	D

Abbreviations used in this table

E = Existing Site
P = Proposed Site
D = Designate/Protect
N = Not Designated

[1] Parks managed by Coos County on BLM-administered land.

Table 2-8. Oil and Gas and Locatable Minerals Restrictions (Acres)

	Alternatives					
Restriction	**NA**	**A**	**B**	**C**	**D**	**E**
Closed-Nondiscretionary [1]	1,600	1,600	1,600	1,600	1,600	1,600
Open-No Surface Occupancy [2]	2,100	4,100	7,300	9,900	13,000	25,600
Open-With Additional Restrictions[3]	5,300	6,000	10,400	20,200	36,100	64,900
Open-Standard Stipulations	320,600	317,900	310,300	297,900	278,100	237,500

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[1] Congressionally designated areas, other agency withdrawals, wilderness and wilderness study areas

[2] Recreation sites and areas, R&PP and FLPMA leases, special areas, VRM Class I areas, riparian management areas, progeny test sites, regional forest nutritional study areas, threatened and endangered species habitat

[3] Seasonal wildlife restrictions, corridors of rivers found suitable for designation as scenic or recreational, VRM Class II areas, managed rural interface areas, steep slopes (60%), powersite withdrawals

Table 2-9. Locatable Mineral Restrictions (Acres)

	Alternatives					
Restriction	**NA**	**A**	**B**	**C**	**D**	**E**
Closed-Nondiscretionary [1]	1,300	1,000	1,000	1,000	1,000	1,000
Closed-Discretionary [2]	5,800	5,800	8,100	12,200	12,200	5,800
Open-Standard Requirements	313,800	318,800	313,200	304,200	297,000	298,700
Open-With Additional Restrictions [3]	8,700	4,000	7,300	12,200	19,400	24,100

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[1] Congressionally designated areas

[2] Special areas, pending withdrawals, R&PP and FLPMA leases, proposed exchanges

[3] Powersite reserves, areas closed to ORV use, riparian management areas, critical habitat of threatened and endangered species, VRM Class I and II, corridors of rivers suitable for designation as scenic or recreational, some recreation sites, seasonal wildlife restrictions

Table 2-10. Salable Mineral Restrictions (Acres)

Restriction	Alternatives NA	A	B	C	D	E
Closed - Nondiscretionary [1]	600	600	600	600	600	600
Closed - Discretionary [2]	7,100	7,800	11,500	16,900	21,300	44,600
Open - Standard Requirements	316,400	316,000	309,800	245,200	216,600	160,700
Open - With Additional Restrictions [3]	5,500	5,200	7,700	66,900	91,100	123,700

[1] Congressionally designated areas

[2] Pending or existing withdrawals, special areas, riparian management areas, corridors of rivers found suitable for designation as scenic or recreational, R&PP leases, VRM Class I, recreation sites, areas closed to ORV use, cultural resource sites

[3] Threatened and endangered species habitat, other protected/managed plant or animal habitat, seasonal wildlife restrictions, federal mineral estate only

Table 2-11. Management of Identified Rural Interface Areas

Rural Interface Area	BLM Acres by Alternative NA	A	B	C	D	E
	0	0	2,100	2,100	2,100	6,700

Table 2-12. Eligible Wild and Scenic River Suitability

River Name	Segment Length (Miles)	BLM-Admin. Within 1/4 Mi. (Acres)	Suitability By Alternative					
			NA	A	B	C	D	E
Smith River	61	5,300	0	0	0	0	0	R
Wassen Creek	17	1,400	0	0	0	0	0	R
North Fork Coquille River	42	2,700	0	0	0	0	0	R
East Fork Coquille River	32	3,300	0	0	0	0	0	R
New River	8	500	0	0	0	S	S	S
South Fork Pistol River	12	600	0	0	0	0	0	R
North Fork Chetco River	11	500	0	0	0	0	0	R

Abbreviations used in this table:

W = Wild
S = Scenic
R = Recreational
0 = None

Appendix F. Record of Decision for *Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl*

Standards and Guidelines
for *Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*

This appendix consists of the Record of Decision and its Attachment A, published in April 1994, for the *Final Supplemental Environmental Impact Statement on Management of Habitat for LateSuccessional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*. It is referred to in this PRMP/FEIS as the SEIS ROD.

The SEIS ROD is bound separately from the PRMP/FEIS and is incorporated by reference. The Draft and Final SEIS and the SEIS ROD were sent to those who received copies of the Draft Coos Bay District Resource Management Plan and Environmental Impact Statement, and to agencies, libraries, and others who requested it. The document is available upon request.

To obtain a copy of the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl*, send a request in writing to:

Regional Ecosystem Office
P.O. Box 3623
Portland, OR 97208-3623

Appendix G. Management For SEIS Special Attention Species

	Survey Strategies [1]				K/S	Require Protection Buffers [2]
	1	2	3	4		
Fungi						
Mycorrhizal Fungi						
Boletes						
Gastroboletus subalpinus	x		x			
Gastroboletus turbinatus			x		S	
Boletes, low elevation						
Boletus piperatus			x		S	
Tylopilus pseudoscaber	x		x		S	
Rare Boletes						
Boletus haematinus	x		x			
Boletus pulcherrimus	x		x		S	
Gastroboletus imbellus	x		x			
Gastroboletus ruber	x		x			
False Truffles						
Nivatogastrium nubigenum	x		x		S	
Rhizopogon abietis			x			
Rhizopogon atroviolaceus			x			
Rhizopogon truncatus			x		S	
Thaxterogaster pingue			x			
Uncommon False Truffle						
Macowanites chlorinosmus	x		x		S	
Rare False Truffles						
Alpova alexsmithii	x		x			
Alpova olivaceotinctus	x		x			
Arcangeliella crassa	x		x			
Arcangeliella lactarioides	x		x			
Destuntzia fusca	x		x		S	
Destuntzia rubra	x		x		S	
Gautteria magnicellaris	x		x			
Gautieria otthii	x		x			
Leucogaster citrinus	x		x		S	
Leucogaster microsporus	x		x			
Macowanites lymanensis	x		x			
Macowanites mollis	x		x		S	
Martellia fragrans	x		x			
Martellia idahoensis	x		x		S	
Martellia monticola	x		x			
Octavianina macrospora	x		x		S	
Octavianina papyracea	x		x		S	
Rhizopogon brunneiniger	x		x		S	
Rhizopogon evadens var. subalpinus	x		x		S	
Rhizopogon exiguus	x		x		S	
Rhizopogon flavofibrillosus	x		x		S	

	Survey Strategies[1]					Require Protection Buffers[2]
	1	2	3	4	K/S	
Rhizopogon inquinatus	x		x		S	
Sedecula pulvinata	x		x		S	
Undescribed Taxa, Rare Truffles & False truffles						
Alpova sp. nov. #Trappe 9730	x		x		S	
Alpova sp. nov. #Trappe 1966	x		x		S	
Arcangeliella sp. nov. #Trappe 12382	x		x		S	
Arcangeliella sp. nov. #Trappe 12359	x		x		S	
Chamonixia pacifica sp. nov. #Trappe 12768	x		x		S	
Elaphomyces sp, nov. #Trappe 1038	x		x		S	
Gastroboletus sp. nov. #Trappe 2897	x		x		S	
Gastroboletus sp. *nov. #Trappe 7515*	x		x			
Gastrosuillus sp. *nov. #Trappe 7516*	x		x			
Gastrosuillus sp. nov. *#Trappe 9608*	x		x			
Gymnomyces sp. nov. #Trappe 4703, 5576	x		x			
Gymnomyces sp. nov. #Trappe 5052	x		x			
Gymnomyces sp. nov. #Trappe 1690, 1706,1710	x		x			
Gymnomyces sp. nov. #Trappe 7545	x		x			
Hydnotrya sp. nov. #Trappe 787, 792	x		x			
Hydnotrya subnix sp. nov. #Trappe 1861	x		x			
Martellia sp. nov. #Trappe 649	x		x			
Martellia sp. nov. #Trappe 1700	x		x			
Martellia sp. nov. #Trappe 311	x		x			
Martellia sp. nov. #Trappe 5903	x		x			
Octavianina sp. nov. #Trappe 7502	x		x			
Rhizopogon sp. nov. #Trappe 9432	x		x		S	
Rhizopogon sp. nov. #Trappe 1692	x		x			
Rhizopogon sp. nov. #Trappe 1698	x		x			
Thaxterogaster sp. nov. #Trappe 4867, 6242,7427,7962,8520	x		x		S	
Tuber sp. nov. #Trappe 2302	x		x		S	
Tuber sp. nov. #Trappe 12493	x		x		S	
Rare Truffles						
Balsamia nigra	x		x		S	
Choiromyces alveolatus	x		x			
Choiromyces venosus	x		x		S	
Elaphomyces anthracinus	x		x			
Elaphomyces subviscidus	x		x		S	
Chanterelles						
Cantharellus cibarius			x	x	K	
Cantharellus subalbidus			x	x	K	
Cantharellus tubaeformis			x	x	S	
Chanterelles - Gomphus						
Gomphus bonarii			x		S	
Gomphus clavatus			x		K	
Gomphus floccosus			x		K	
Gomphus kauffmanii			x		S	

	Survey Strategies[1]					Require Protection Buffers[2]
	1	2	3	4	K/S	
Rare Chanterelle						
Cantharellus formosus	x		x		S	
Polyozellus multiplex	x		x			
Uncommon Coral Fungi						
Ramaria abietina			x		S	
Ramaria araiospora	x		x		S	
Ramaria botryis var. *aurantiiramosa*	x		x		S	
Ramaria concolor f. tsugina			x		S	
Ramaria coulterae			x		S	
Ramaria fasciculata var. *sparsiramosa*	x		x		S	
Ramaria gelatiniaurantia	x		x		S	
Ramaria largentii	x		x		S	
Ramaria rubella var. *blanda*	x		x		S	
Ramaria rubrievanescens	x		x		S	
Ramaria rubripermanens	x		x			
Ramaria suecica			x		S	
Ramaria thiersii	x		x		S	
Rare Coral Fungi						
Ramaria amyloidea	x		x		S	
Ramaria aurantiisiccescens	x		x		S	
Ramaria celerivirescens	x		x		S	
Ramaria claviramulata	x		x		S	
Ramaria concolor f. marri	x		x		S	
Ramaria cyaneigranosa	x		x		S	
Ramaria hilaris var. *olympiana*	x		x		S	
Ramaria lorithamnus	x		x		S	
Ramaria maculatipes	x		x		S	
Ramaria rainierensis	x		x		S	
Ramaria rubribrunnescens	x		x		S	
Ramaria stuntzii	x		x		S	
Ramaria verlotensis	x		x		S	
Ramaria gracilis	x		x		S	
Ramaria spinulosa	x		x		S	
Phaeocollybia						
Phaeocollybia attenuate			x		S	
Phaeocollybia californica	x		x		S	
Phaeocollybia carmanahensis	x		x		S	
Phaeocollybia dissiliens	x		x		S	
Phaeocollybia fallax			x		S	
Phaeocollybia gregaria	x		x		S	
Phaeocollybia kauffmanii	x		x		S	
Phaeocollybia olivacea			x		S	
Phaeocollybia oregonensis	x		x		S	
Phaeocollybia piceae	x		x		S	
Phaeocollybia pseudofestiva			x		S	
Phaeocollybia scatesiae	x		x		S	
Phaeocollybia sipei	x		x		S	
Phaeocollybia spadicea			x		S	

	Survey Strategies [1]					Require Protection Buffers [2]
	1	2	3	4	K/S	
Uncommon Gilled Mushrooms						
Catathelasma ventricosa			x		S	
Cortinarius azureus			x		S	
Cortinarius boulderensis	x		x		S	
Cortinarius cyanites			x		S	
Cortinarius magnivelatus	x		x		S	
Cortinarius olympianus	x		x		S	
Cortinarius spilomius			x		S	
Cortinarius tabularis			x		S	
Cortinarius valgus			x		S	
Dermocybe humboldtensis	x		x		S	
Hebeloma olympiana	x		x		S	
Hygrophorus caeruleus	x		x		S	
Hygrophorus karstenii			x		S	
Hygrophorus vernalis	x		x			
Russula mustelina			x		S	
Rare Gilled Mushrooms						
Chroogomphus loculatus	x		x		S	
Cortinarius canabarba	x		x		S	
Cortinarius rainierensis	x		x		S	
Cortinarius variipes	x		x		S	
Cortinarius verrucisporus	x		x		S	
Cortinarius wiebeae	x		x		S	
Tricholoma venenatum	x		x		S	
Uncommon Ecto-Polypores						
Albatrellus ellisii			x		S	
Albatrellus flettii			x		S	
Rare Ecto-Polypores						
Albatrellus avellaneus	x		x		S	
Albatrellus caeruleoporus	x		x		S	
Tooth Fungi						
Hydnum repandum			x		K	
Hydnum umbilicatum			x		S	
Phellodon atratum			x		S	
Sarcodon fuscoindicum			x		S	
Sarcodon imbricatus			x		S	
Rare Zygomycetes						
Endogone acrogena	x		x		S	
Endogone oregonensis	x		x		S	
Glomus radiatum	x		x		S	
Saprobes (Decomposers)						
Uncommon Gilled Mushrooms						
Baeospora myriadophylla			x		S	
Chrysomphalina grossula			x		S	

	Survey Strategies[1]				K/S	Require Protection Buffers[2]
	1	2	3	4		
Collybia bakerensis	x		x		S	
Fayodia gracilipes (rainierensis)			x		S	
Gymnopilus puntifolius	x		x		S	
Marasmius applanatipes	x		x		S	
Mycena hudsoniana	x		x		S	
Mycena lilacifolia			x		S	
Mycena marginella			x		S	
Mycena monticola	x		x		S	
Mycena overholtsii	x		x		S	
Mycena quinaultensis	x		x		S	
Mycena tenax			x		S	
Mythicomyces corneipes			x		S	
Neolentinus kauffmanii	x		x		S	
Pholiota albivelata	x		x		S	
Stagnicola perplexa			x		S	
Rare Gilled Mushrooms						
Clitocybe subditopoda	x		x		S	
Clitocybe senilis	x		x		S	
Neolentinus adherens	x		x		S	
Rhodocybe nitida	x		x		S	
Rhodocybe speciosa	x		x		S	
Tricholomopsis fulvescens	x		x		S	
Noble Polypore (rare and endangered)						
Oxyporus nobilissimus	x	x	x			
Bondarzewia Polypore						
Bondarzewia montana	x	x	x			
Rare Resupinates and Polypores						
Aleurodiscus farlowii	x		x		S	
Dichostereum granulosum	x		x		S	
Cudonia monticola			x		S	
Gyromitra californica			x	x	S	
Gyromitra esculenta			x	x	S	
Gyromitra infula			x	x	S	
Gyromitra melaleucoides			x	x		
Gyromitra montana (syn. G. gigas)			x	x		
Otidea leporina	x		x		K	Y
Otidea onotica	x		x		S	Y
Otidea smithii	x		x		S	Y
Plectania melastoma			x		S	
Podostroma alutaceum			x		S	
Sarcosoma mexicana			x		S	Y
Sarcosphaera eximia			x		S	
Spathularia flavida			x			
Rare Cup Fungi						
Aleuria rhenana	x		x		S	Y
Bryoglossum gracile	x		x		S	
Gelatinodiscus flavidus	x		x		S	

	Survey Strategies [1] 1	2	3	4	K/S	Require Protection Buffers [2]
Helvella compressa	x		x		S	
Helvella crassitunicata	x		x		S	
Helvella elastica	x		x		S	
Helvella maculata	x		x		S	
Neournula pouchetii	x		x		S	
Pithya vulgaris	x		x		S	
Plectania latahensis	x		x		S	
Plectania milleri	x		x		S	
Pseudaleuria quinaultiana	x		x		S	
Club Coral Fungi						
Clavariadelphus ligula			x	x	S	
Clavariadelphus pistilaris			x	x	S	
Clavariadelphus truncatusx			x	x	S	
Clavariadelphus borealis			x	x	S	
Clavariadelphus lovejoyae			x	x	S	
Clavariadelphus sachalinensis			x	x	S	
Clavariadelphus subfastigiatus			x	x	S	
Jelly Mushroom						
Phlogoitis helvelloides			x	x	S	
Branched Coral Fungi						
Clavulina cinerea			x	x	S	
Clavulina cristata			x	x	S	
Clavulina ornatipes			x	x	S	
Mushroom Lichen						
Phytoconis ericetorum			x	x	S	
Parasitic Fungi						
Asterophora lycoperdoides			x		S	
Asterophora parasitica			x		S	
Collybia racemosa			x		S	
Cordyceps capitata			x		S	
Cordyceps ophioglossoides			x		S	
Hypomyces luteovirens			x		S	
Cauliflower Mushroom						
Sparassis crispa			x		K	
Moss Dwelling Mushrooms						
Cyphellostereum laeve			x		S	
Galerina atkinsoniana			x		S	
Galerina cerina			x		S	
Galerina heterocystis			x		S	
Galerina sphagnicola			x		S	
Galerina vittaeformis			x		S	
Rickenella setipes			x		S	
Coral Fungi						
Clavicorona avellanea			x		S	

	Survey Strategies[1]				K/S	Require Protection Buffers[2]
	1	2	3	4		
Lichens						
Rare Forage Lichen						
Bryoria tortuosa	x		x		S	
Rare Leafy (arboreal) Lichens						
Hypogymnia duplicata	x	x	x		S	
Tholurna dissimilis	x		x			
Rare Nitrogen-fixing Lichens						
Dendriscocaulon intricatulum	x		x		S	
Lobaria hallii	x		x		S	
Lobaria linita	x	x	x		S	
Nephroma occultum	x		x		S	
Pannaria rubiginosa	x		x		S	
Pseudocyphellaria rainierensis	x	x	x		S	
Nitrogen-fixing Lichens						
Lobaria oregano				x	K	
Lobaria pulmonaria				x	K	
Lobaria scrobiculata				x	K	
Nephroma bellum				x	K	
Nephroma helveticum				x	K	
Nephroma laevigatum				x	S	
Nephroma parile				x	S	
Nephroma resupinatum				x	K	
Pannaria leucostictoides				x	S	
Pannaria mediterranea				x	S	
Pannaria saubinetii				x	S	
Peltigera collina				x	S	
Peltigera neckeri				x	S	
Peltigera pacifica				x	S	
Pseudocyphellaria anomala				x	K	
Pseudocyphellaria anthraspis				x	K	
Pseudocyphellaria crocata				x	K	
Sticta beauvoisii				x	S	
Sticta fuliginosa				x	S	
Sticta limbata				x	S	
Pin Lichens						
Calicium abietinum				x	S	
Calicium adaequatum				x	S	
Calicium adspersum				x	S	
Calicium glaucellum				x	S	
Calicium viride				x	S	
Chaenotheca brunneola				x	S	
Chaenotheca chrysocephala				x	S	
Chaenotheca ferruginea				x	S	
Chaenotheca furfuracea				x	S	
Chaenotheca subroscida				x	S	
Chaenothecopis pusilla				x	S	
Cyphelium inquinans				x	S	
Microcalicium arenarium				x	S	

	Survey Strategies[1]					**Require Protection Buffers[2]**
	1	**2**	**3**	**4**	**K/S**	
Mycocalicium subtile				x	S	
Stenocybe clavata				x	S	
Stenocybe major				x	S	
Rare Rock Lichens						
Pilophorus nigricaulis	x		x		S	
Sticta arctica	x		x		S	
Riparian Lichens						
Cetrelia cetrarioides				x	S	
Collema nigrescens				x	S	
Leptogium burnetiae var. *hirsutum*				x	S	
Leptogium cyanescens				x	S	
Leptogium saturninum				x	S	
Leptogium teretiusculum				x	S	
Platisnwtia lacunosa				x	S	
Ramalina thrausta				x	S	
Usnea longissima				x	K	
Aquatic Lichens						
Dermatocarpon luridum	x		x		S	
Hydrothyria venosa	x		x		S	
Leptogium rivale	x		x		S	
Rare Oceanic influenced Lichens						
Bryoria pseudocapillaris	x		x		K	
Bryoria spiralifera	x		x		S	
Bryoria subcana	x		x		S	
Buellia oidalea	x		x		S	
Erioderma sorediatum	x		x		S	
Hypogymnia oceanica	x		x		S	
Leioderma sorediatum	x		x		S	
Leptogium brebissonii	x		x		S	
Niebla cephalota	x		x		K	
Pseudocyphellaria mougeotiana	x		x		S	
Teloschistes flavicans	x		x		K	
Usnea hesperina	x		x		S	
Oceanic influenced Lichens						
Cetraria californica	x		x		S	
Heterodermia leucomelos	x		x		S	
Loxospora sp nov. "*corallifera*" *(Brodo in edit)*	x		x		S	
Pyrrhospora quernea	x		x		S	
Additional Lichen Species						
Cladonia norvegica			x		S	
Heterodermia sitchensis			x		S	
Hygomnia vittiata			x		S	
Hypotrachyna revoluta			x		S	
Ramalina pollinaria			x		S	
Nephroma isidiosum			x		S	

	Survey Strategies [1]					Require Protection Buffers [2]
	1	2	3	4	K/S	
Bryophytes						
Antitrichia curtipendula				x	S	
Bartramiopsis lescurii	x		x		S	
Brotherella roelli	x		x			
Buxbaumia piperi	x		x		K	Y
Buxbaumia viridis	x		x		S	Y
Diplophyllu albicans	x		x		S	
Diplophyllum plicatum	x	x				
Douinia ovata				x		
Encalypta brevicolla var. *crumiana*	x		x		S	
Herbertus aduncus	x		x		S	
Herbertus sakurali	x		x		S	
Iwatsuklella leucotricha	x		x		S	
Kurzia makinoana	x	x			S	
Marsupella emarginata var. *aquatica*	x	x				
Orthodontlum gracile	x		x		S	
Plagiochila satol	x		x		S	
Plagiochila semidecurrens	x		x		S	
Pleuroziopsis ruthenica	x		x		S	
Ptilidium californicum (CA only)	x	x			S	
Racomitrium aquaticum	x		x		S	
Radula brunnea	x		x		S	
Rhizomnium nudum					S	Y
Schistostega pennata (WA only)	x		x			
Scouleria marginata				x	S	
Tetraphis geniculata	x		x		S	Y
Tritomaria exsectiformis	x	x			S	
Tritomaria quinquedentata	x		x		S	
Ulota meglospora					S	Y
Vascular Plants						
Allotropa virgata	x	x			K	
Arceuthobium tsugense	x	x			S	
Aster vialis	x	x			S	
Bensoniella oregana (California)	x	x				
Botrychium minganense	x	x			S	
Botrychium montanum	x	x			S	
Clintonia andrewsiana	x	x			S	
Coptis asplenifolia	x	x				
Coptis trifolia	x	x				
Corydalis aquae-gelidae	x	x				
Cypripedium fasciculatum	x	x			K	
Cypripedium montanum	x	x			S	
Galium kamtschaticum	x	x				
Habenaria orbirulata	x	x				
Pedicularis howellii	x	x				
Scoliopus biglovei	x	x				
Arthropods						
Canopy herbivores (south range)				x	S	
Coarse wood chewers (south range)				x	S	
Litter and soil dwelling species (south range)				x	S	
Understory and forest gap herbivores				x	S	

	Survey Strategies [1]					
	1	2	3	4	K/S	Require Protection Buffers [2]
Mollusks						
Ancotrema voyanum	x	x				
Cryptomastix devia	x	x				
Cryptomastix hendersoni	x	x				
Helminthoglypta hertleini	x	x				
Helminthoglypta talmadgei	x	x				
Megomphix hemphilli	x	x				
Monadenia chaceana	x	x				
Monadenia churchi	x	x				
Monadenia fidelis klamathica	x	x				
Monadenia fidelis minor	x	x				
Monadenia fidelis ochromphalus	x	x				
Monadenia troglodytes troglodytes	x	x				
Monadenia troglodytes wintu	x	x				
Oreohelix n. sp.	x	x				
Pristiloma articum crateris	x	x				
Trilobopsis roperi	x	x				
Trilobopsis tehamana	x	x				
Vertigo n. sp.	x	x				
Vespericola pressleyi	x	x				
Vespericola shasta	x	x				
Deroceras hesperium	x	x				
Hemphillia barringtoni	x	x				
Hemphillia glandulosa	x	x				
Hemphillia malonei	x	x				
Hemphillia pantherina	x	x				
Prophysaon coeruleum	x	x				
Prophysaon dubium	x	x				
Fluminicola n. sp. 1	x	x				
Fluminicola n. sp. 11	x	x				
Fluminicola n. sp. 14	x	x				
Fluminicola n. sp. 15	x	x				
Fluminicola n. sp. 16	x	x				
Fluminicola n. sp. 17	x	x				
Fluminicola n. sp. 18	x	x				
Fluminicola n. sp. 19	x	x				
Fluminicola n. sp. 2	x	x				
Fluminicola n. sp. 20	x	x				
Fluminicola n. sp. 3	x	x				
Fluminicola seminalis	x	x				
Juga (O.) n. sp. 2	x	x				
Juga (O.) n. sp. 3	x	x				
Lyogyrus n. sp. 1	x	x				
Lyogyrus n. sp. 2	x	x				
Lyogyrus n. sp. 3	x	x				
Vorticifex klamathensis sinitsini	x	x				
Vorticifex n. sp. I	x	x				
Amphibians						
Del Norte salamander	x	x			K	Y
Larch Mountain salamander	x	x				
Shasta salamander	x	x				
Siskiyou Mountains salamander	x	x			S	Y

	Survey Strategies [1]					Require Protection Buffers [2]
	1	2	3	4	K/S	
Van Dyke's salamander (Cascades)	x	x				
Birds						
Great Gray Owl	x	x				
White-headed woodpecker						Y
Black-backed woodpecker					K	Y
Flammulated Owl						Y
Pygmy Nuthatch						Y
Mammals						
Lynx			x			Y
Red tree vole (*P. longicaudus*)		x			K	
Bats						
Fringed myotis	x	x			K	Y
Silver-haired bat	x	x				
Long-eared myotis	x	x			K	Y
Long-legged myotis	x	x			K	Y
Pallid bats						Y
Townsend's big-eared bats					K	Y

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[1] Survey Strategies:
1 = Manage known sites.
2 = Survey prior to activities and manage sites.
3 = Conduct extensive surveys and manage sites.
4 = Conduct general regional surveys.

[2] Require Protective Buffers: See the text in the SEIS for requirements for species indicated.

Abbreviations used in this table:
K = Documented to occur on the Coos Bay District.
S = Suspected to occur on the Coos Bay District.
Y = Species requiring protective buffer.

Source: SEIS ROD, Table C-3

Appendix H. Best Management Practices for Maintaining Water Quality and Soil Productivity

Introduction

The Best Management Practice (BMP) concept used in this plan is designed to protect water quality, enable the achievement of water quality standards, and maintain soil productivity. The concept was developed and initiated in federal water quality legislation, with the focus of implementation at the state level. The Oregon Department of Environmental Quality (DEQ) has granted the BLM Designated Management Agency status, making BLM responsible for implementing BMPs on the lands it administers. The BLM is also guided by the Clean Water Act of 1972 as amended in 1977 and 1987, state of Oregon water quality legislation (chapter 340), and the O&C Act. These BMPs are designed to comply with standards of the Oregon Forest Practices Act. Also, in Chapter 2, there are management actions/direction specific to all land use allocations and resources.

All alternatives would utilize a mix of conservation practices such as those identified in this appendix or their equivalent. Together, these practices would become the BMP design for a project. The soil and water protection measures described below are types of controls that would be used to maintain water quality and to protect soil productivity and dependent beneficial uses.

The iterative process used in selecting and implementing nonpoint controls—including BMPs—to achieve water quality standards includes:

- Design of BMPs based upon site-specific conditions; technical, economical, and institutional feasibility; and the water quality of those waters potentially impacted.
- Monitoring to ensure that practices are properly designed and applied.
- Monitoring to determine the effectiveness of practices in meeting water quality standards and the appropriateness of water quality criteria in reasonably assuring protection of beneficial uses.
- Adjustment of BMPs when water quality standards are not being protected to a desired level and/or possible adjustment of water quality standards based upon considerations in 40 CFR 131.

BMPs revised through the iterative process of monitoring and adjustment are expected to lead to achievement of water quality standards. The following list of conservation practices are more specific than, and in addition to, Chapter 2 Management Action Direction. The conservation practices are not, however, intended to be all inclusive nor replace site-specific project planning, which may require the use of different or additional conservation practices.

Four Goals

Goal #1 - Maintain water quality within State Water Quality Standards and Clean Water Act requirements.

Goal #2 - Meet the objectives of the Aquatic Conservation Strategy described in Chapter 2.

Goal #3 - Manage soil productivity at or above natural levels.

Goal #4 - Use the watershed analysis planning process as a means of identifying initial sets of conservation practices on watersheds 20-200 square miles in size that could be used for future activities in a BMP design.

Conservation Practices for Soil and Water Planning and Management

1. An interdisciplinary (ID) team, including a soil scientist and/or a hydrologist, will review all proposed activities that have potential to adversely impact soil or water. Soil and water protection will be an integral part of all plans. If necessary, plan modification or additional mitigation will be used to keep impacts to an acceptable minimum, while not adversely affecting aquatic conservation strategy objectives.

2. Watershed restoration planning will be done with watershed analysis to improve impaired watershed function and water quality. An inventory and implementation schedule will be developed as funds become available.

3. A floodplain and wetland evaluation will be completed prior to any land acquisition, disposal by sale or exchange, or where development or alterations of wetlands may occur.

4. Construction in, or change of, floodplains and wetland character will not occur when there is a viable alternative that avoids these important lands, unless done for enhancement purposes.

5. Community and noncommunity domestic supply watersheds will be managed for multiple use, but with a special emphasis on protection of water quality consistent with state standards and the Aquatic Conservation Strategy.

6. Pesticide applications used for growing, harvesting, and protecting forest tree species will conform with the Aquatic Conservation Strategy and the BMPs identified in the *ROD for Management of Competing Vegetation* (see Appendix I-C in the Draft RMP).

7. To avoid water contamination, care will be taken in siting of temporary camps and also proper waste disposal procedures will be used.

8. Following wildfires, a rehabilitation plan will be developed using the ID team process. Site-specific information will be collected, and treatments will be developed based on soils, water, and downstream values.

9. A plan for hazardous substance spills will be developed and updated annually for spill prevention and control.

10. Ongoing activities may be interrupted or halted at the discretion of the District Manager or Area Manager for soil and water protection purposes.

Conservation Practices for Streams and Riparian Reserves

1. Riparian Reserves would be designated along all streams, lakes, ponds, and other waterbodies for attainment of the Aquatic Conservation Strategy.

2. Watershed analysis will precede forest activities in a Riparian Reserve except those categorically excluded under NEPA.

3. Naturally-occurring down logs or trees will not be removed from Riparian Reserves except for the benefit of the stream or Riparian Reserve. Potentially floatable debris that may be mobilized during infrequent floods, and may reasonably damage downstream users' improvements may be removed after watershed analysis.

4. Timber will be directionally-felled or line-pulled away from perennial streams or Riparian Reserves when harvesting within a tree length of either, except to enhance stream structure by felling trees into the stream.

5. Stream crossings will be minimized and located where channels are well-defined, unobstructed, and straight. Crossings will be designed to minimize soil erosion, stream sedimentation, and adverse impacts on aquatic habitat.
6. The use of heavy equipment in streams will be restricted to that area necessary for correct installation of crossing structures, water source development, watershed restoration, or fisheries enhancement projects.
7. When possible, streams will be diverted around construction sites where fishery or other important stream values are present.
8. Culverts or pipe arches placed on valuable fish streams will be at zero to 0.5 percent or natural stream grade.
9. Energy dissipation material will be placed on fills around the inlet and outlet structures.
10. Filling, removal of materials from, or relocation of channels will not be allowed in fish-bearing streams unless no other alternative exists, except for stream restoration projects.
11. Instream habitat improvement structures will be designed using state-of-art techniques and to be in balance with local stream hydraulics.
12. Low water fords will be used only as a last resort, and then during the driest time of the year with minimum streambank disturbance. Rocked approaches and erosion control practices will be used during and following any use of fords. The pre-existing stream channel—including bed and banks—will be restored after need for the ford ceases.
13. Refueling, equipment maintenance, fuel storage, or other handling of petroleum products will not occur in Riparian Reserves.
14. Placer mining claimants will be required to obtain all necessary federal and state operating permits before beginning work.

Conservation Practices for Road and Landing Construction

1. Road and landing construction activities will be limited to the dry season, generally from June into October.
2. Roads and landings will be designed and constructed to BLM standards, but be the narrowest and smallest sizes that will still meet safety standards, objectives of anticipated uses, and resource protection.
3. Roads and landings will be located out of Riparian Reserves to the extent possible. Unless construction is under existing reciprocal road right-of-way agreements, watershed analysis will precede location of any new roads or landings that must occur in a Riparian Reserve.
4. Roads will be located on stable locations as much as possible (e.g., ridge tops, stable benches or flats, and gentle-to-moderate side-slopes). Grades will be rolled (varied) to maintain stable locations. Headwalls, old slump benches, seeps, and side slopes in excess of 65 percent will be avoided as much as possible. Heights of cutbanks will be minimized, and balanced earthwork will be used.
5. Road construction will be avoided as much as possible on slopes where geologic bedding planes are inclined with the slope.
6. The theoretical 100-year flood will be used as design criteria for all culverts, bridges, and other stream crossings, including allowance for bed load and debris. Stream crossings will be constructed with low diversion potential.

7. To minimize sidecasting of waste material, 100 percent end-haul (90 percent or greater actual) will be required where roads and landings must be located on side slopes exceeding 60 percent. On all road segments requiring end-haul, a tracked excavator will be preferred for pioneering and main excavation work. Other equipment capable of achieving this goal may be utilized. Pioneer work will be confined to within-roadway construction limits.

8. Stable end-haul (waste) sites will be located prior to end-hauling. These sites will be kept properly shaped, drained, and vegetated.

9. Controlled blasting techniques that minimize the amount of soil/rock displaced from the road location will be used.

10. Only soil and rock materials will be used in fills. Organic materials will not be used. Fills will be compacted to 85 to 95 percent maximum density. Light-weight fills consisting of chips, bark, or other material may be used in areas where rotational slumps may cause road failures.

11. Road drainage will be designed to minimize soil erosion and stream sedimentation. Energy dissipators, culvert down pipes, or drainage dips will be used where water is discharged onto loose material, and erodible or steep slopes.

12. Road surface shape (e.g., crowning, insloping, and outsloping) that meets planned use and resource protection needs will be used.

13. New roads to be included in the permanent road system will normally have a rock surface applied. Those new roads having a natural surface (generally roads in Curry County) may have the dirt surface seeded, mulched, and fertilized.

14. New roads not included in the permanent road system will be restored on completion of use. The road surface will be seeded and mulched, stream crossings restored, and the road generally blocked from further use. These roads may also be decommissioned through use of a winged ripper during the driest part of the year.

15. Following use of landings that have side slopes exceeding 60 percent, all of the soil, rock, and cull woody debris material that has been pushed over the edge will be pulled back to a stable part of the landing surface.

16. Soil erosion control work will be completed the same season disturbance occurs and using the district seed mix. Seed and fertilizer will be applied during the optimum time for establishment and prior to winter rains, primarily September 1 to October 30, and secondarily March 15 to May 15.

17. Drainage and soil erosion control practices will be applied to renovated or reconstructed roads in the same manner as newly-constructed roads.

18. Road maintenance activities will be planned to minimize soil erosion and subsequent stream sedimentation. Heavy equipment will be used to clean ditches at necessary intervals. Undercutting of backslopes will be avoided. Bare soil created by maintenance activities will be protected from soil erosion as soon as possible.

19. Sloughed cutbank materials will not be sidecast onto slopes greater than 60 percent, nor into or near drainages. This material will be end-hauled to a stable site.

20. Low-growing, herbaceous ground cover and brush will be retained on cut-and-fill slopes unless it poses a safety hazard.

21. Permanent, effective drainage will be provided on roads that are closed but not totally reclaimed. Waterbars, dips, or outsloping will be used; culverts and bridges will be removed; and the natural drainway re-established.

Conservation Practices for Timber Harvest

1. Timber sale units will be designed to minimize adverse impacts on soils and water. The sale contract will contain stipulations for protection or mitigation. All Riparian Reserves, perennial and intermittent streams, and other water features will be shown on planning and contract maps.

2. Yarding through Riparian Reserves will be avoided unless there is no reasonable alternative. The location, number, and width of corridors will be specified prior to yarding, and natural openings will be used as much as possible. Not more than 250 feet of yarding corridors would be allowed within any 1,000 feet of stream. Maximum corridor width will be 50 feet, and corridors will be at least 50 feet apart. Full log suspension will be used where feasible.

3. Cable yarding, preferably with partial log suspension, will be the preferred standard method for log yarding on all district lands.

4. Cable systems capable of at least partial log suspension will be required to yard all lands inventoried as FGR1 and FGR2 in the TPCC system.

5. Aerial systems or skyline cable systems capable of full log suspension will be utilized when feasible to yard all lands inventoried as FGR2 in the TPCC system.

6. Seasonal yarding restrictions will be used in some areas where the desired log suspension cannot be achieved.

7. Downhill yarding will be avoided unless used to prevent additional or difficult road or landing construction.

8. Ground-Based Yarding Systems

    a. If tractors or rubber-tired skidders are used for log skidding, skid trails will be designated with the objective of having less than 12 percent of a harvest area affected by compaction. Existing skid roads will be used to the extent practical.

    b. Tractors or rubber-tired skidders will be restricted to slopes of less than 35 percent and used only during the driest part of the year, typically mid-July to mid-September.

    c. Other ground-based yarding systems (e.g., spider-walkers and feller bunchers) may be used on slopes over 35 percent, provided there would be insignificant growth-loss effect and skid trails involve less than 12 percent of the harvest area.

    d. Following use, skid roads that will not be used for future entries will be ripped using a winged subsoiler at the optimum time and the land returned to timber production.

    e. Skid trails to be used for future entries will have erosion control and drainage measures applied between usage.

    f. Drainage and erosion control measures, including water barring of skid trails, will be applied to bare soil areas following use and prior to winter rains.

Conservation Practices for Silvicultural Operations

1. Riparian Reserves—including open water and wetlands—will be protected during fertilizer application. Buffers at least 100 feet wide will be planned along all flowing streams that have domestic use, support fisheries, or have other important uses. Riparian Reserve buffer widths will be planned around lakes and ponds. Application will be avoided during heavy rain or when wind speed could cause drift. Storage, transfer, and loading sites will be located away from streams and outside Riparian Reserves.

2. Where burning is necessary for site preparation, site-specific prescriptions will be used.

3. Burning prescriptions will be strictly adhered to on highly sensitive soils. These soils include: shallow, rocky soils on 70 percent or greater slopes with south or west aspect, located out of the "fog belt"; and the same kinds of soils on extremely steep (80 percent or greater), and north and east aspects in the drier parts of the district.

4. As much large, down, woody material will be left onsite as possible while still meeting site preparation needs. Gross yarding will be used on steep headwalls and deep V-shaped draws to decrease or break up logging debris concentrations, reduce fire intensity, and minimize potential debris torrent damage. The need for, and amount of, gross yarding will be determined by site-specific watershed analysis. Old embedded logs or other logs that contribute to bank stability will not be removed.

5. Where machine piling of logging debris is used, first preference will be given to low ground pressure backhoe/loader/grapple type equipment. If conventional tractor piling is used, brush blades will be required and piling will be done under strict soil and water protecting constraints. Any machine piling will be done during the driest part of the year, and compacted areas would be tilled with properly designed equipment.

6. Use of tractors for fireline construction will be limited as much as possible, and tractors will be restricted to slopes less than 35 percent. Tractor-constructed fire trails will be waterbarred.

7. Grass/legume seeding of units may be done to protect highly erosive soils following burning. This will be coordinated and reconciled with wildlife and silvicultural objectives.

Appendix I. Management Guidelines and Standards for National Wild and Scenic Rivers

Introduction

The Wild and Scenic Rivers Act (Public Law 90-542 as amended) established a method for providing federal protection for certain of our remaining free-flowing rivers, and preserving them and their immediate environments for the use and enjoyment of present and future generations. Rivers are included in the system so that they may benefit from the protective management and control of development which the Act provides. The following guidelines and standards are extracted in part from the February 3, 1970, and August 26, 1982, joint Department of the Interior and Department of Agriculture guidelines. They would apply to designated rivers through incorporation in formal management plans which are normally developed within three years of designation. The guidelines also apply, on an interim basis, to BLM-administered lands along BLM study rivers, as well as other rivers or river segments which have been found by the BLM to be eligible for consideration as components of the National Wild and Scenic River System (WSRS). In the latter instance, interim application of the guidelines would continue until lifted by a determination of nonsuitability through BLM's planning (RMP) process or by Congressional action.

Section 10(a) of the Act states that:

> "Each component of the National Wild and Scenic Rivers System shall be administered in such a manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration, primary emphasis shall be given to protecting its aesthetic, scenic, historic, archaeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area."

This section is interpreted by the Secretaries of the Interior and Agriculture as stating a nondegradation and enhancement policy for all designated river areas, regardless of classification.

The Congress, with Presidential approval, may determine which river segments will be added to the Wild and Scenic River System. When a river is designated, and BLM is identified as the administering federal agency, BLM will establish administrative boundaries to protect the identified outstandingly remarkable values. By law, the land inside the boundaries normally may not exceed an average of 320 acres per river mile over the designated portion of the river. BLM would delineate boundaries based on natural or man-made features (e.g., canyon rims, roads, and ridge tops) and with consideration of legally identifiable property lines.

A river management plan must also be completed by the administering federal agency within three years after designating legislation. Existing state, local, and federal laws continue in effect during the interim along with general Department of Interior guidelines. If federal designation overlaps State Scenic Waterway designation, a joint federal/state management plan would be developed. All management plans will address the roles of federal, state, county, and relevant Indian tribal governments in management of the river.

Discussion of BLM's inventory to determine which river stretches are eligible for consideration as components of the system is presented in Chapter 2 and Appendix II-G of the draft RMP. Also included in that appendix are discussions of the criteria for eligibility for each classification (wild, scenic, recreational) for which any river reviewed has been found eligible and the results of BLM's eligibility studies.

Management objectives and standards for each river classification (i.e., recreational, scenic, and wild) are provided below.

Recreational Rivers

Recreational rivers are defined by the Act to be "those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."

Management Objective for Recreational River Areas

Management of recreational river areas should give primary emphasis to protecting the values which make it outstandingly remarkable while providing river-related outdoor recreation opportunities in a recreational setting. Recreational classification is a determination of the level of development and does not prescribe or assume recreation development or enhancement. Management of recreational river areas can and should maintain and provide outdoor recreation opportunities. The basic distinctions between a "scenic" and a "recreational" river area are the degree of access, extent of shoreline development, historical impoundment or diversion, and types of land use. In general, a variety of agricultural, water management, silvicultural, recreational, and other practices or structures are compatible with recreational river values, providing such practices or structures are carried on in such a way that there is no substantial adverse effect on the river and its immediate environment.

Management Standards for Recreational River Areas

Recreation facilities may be established in proximity to the river, although recreational river classification does not require extensive recreational developments. Recreational facilities may still be kept to a minimum, with visitor services provided outside the river area. Future construction of impoundments, diversions, straightening, rip-rapping, and other modification of the waterway or adjacent lands would not be permitted except in instances where such developments would not have a direct and adverse effect on the river and its immediate environment. The following program management standards apply:

a. **Forestry Practices**: Forestry practices including timber harvesting would be allowed under standard restrictions to avoid adverse effects on the river environment and its associated values.

b. **Hydroelectric Power and Water Resource Development**: No development of hydroelectric power facilities would be permitted. Existing low dams, diversion works, rip rap and other minor structures may be maintained provided the waterway remains generally natural in appearance. New structures may be allowed provided that the area remains generally natural in appearance and the structures harmonize with the surrounding environment.

c. **Mining**: Subject to existing regulations (i.e., 43 CFR 3809) and any future regulations that the Secretary of the Interior may prescribe to protect values of rivers included in the Wild and Scenic River System, new mining claims are allowed and existing operations are allowed to continue. All mineral activity on federally-administered land must be conducted in a manner that minimizes surface disturbance, water sedimentation and pollution, and visual impairment. Reasonable mining claim and mineral lease access will be permitted. Mining claims, subject to valid existing rights, within the recreational river area boundary can be patented only as to the mineral estate and not the surface estate (subject to proof of discovery prior to the effective date of designation).

d. **Road and Trail Construction**: Existing parallel roads can be maintained on one or both river banks. There can be several bridge crossings and numerous river access points. Roads, trails, and visitor areas must conform to construction and maintenance standards and be free of recognized hazards.

e. **Agricultural Practices and Livestock Grazing**: Lands may be managed for a full range of agriculture and livestock grazing uses, consistent with current practices.

f. **Recreation Facilities**: Interpretive centers, administrative headquarters, campgrounds, and picnic areas may be established in proximity to the river. However, recreational classification does not require extensive recreation development.

g. **Public Use and Access**: Recreation use including, but not limited to, hiking, fishing, hunting, and boating is encouraged in recreational river areas to the extent consistent with the protection of the river environment. Public use and access may be regulated and distributed where necessary to protect and enhance recreational river values. Any new structures must meet established safety and health standards or, in their absence, be free of any recognized hazard.

h. **Rights-of-Way**: New transmission lines, natural gas lines, water lines, etc. are discouraged unless specifically authorized by other plans, orders, and laws. Where no reasonable alternative location exists, additional or new facilities should be restricted to existing rights-of-way. Where new rights-of-way are unavoidable, locations and construction techniques will be selected to minimize adverse effects on recreational river area related values and fully evaluated during the site selection process.

i. **Motorized Travel**: Motorized travel on land will generally be permitted on existing roads. Controls will usually be similar to that of surrounding lands. Motorized travel on water will be in accordance with existing regulations or restrictions.

j. **Instream Flow Assessment**: To the extent practical, consistent with resource management objectives, quantify instream flow and protection requirements related to outstandingly remarkable and other resource values identified through the RMP process. Where possible, conduct a comprehensive, interdisciplinary, resource value-based assessment to delineate resource values, relate flows to resource conditions, and formulate flow strategies which incorporate legal, technical, and administrative aspects to secure instream flows which address values associated with the recreational river segment.

Scenic Rivers

Scenic rivers are defined by the Act to be: “Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.”

Management Objective for Scenic River Areas

Management of scenic river areas should maintain and provide outdoor recreation opportunities in a near-natural setting. In general, a wide range of agricultural, water management, silvicultural, and other practices or structures could be compatible with scenic river values, providing such practices are carried on in such a way that there is no substantial adverse effect on the river and its immediate environment.

Management Standards for Scenic River Areas

The same limitations set forth for recreational river areas are applicable, except that developments should harmonize with the environment, and any developments on shore lands should be screened from the river. The following program management standards apply:

a. **Forestry Practices**: Silvicultural practices, including timber harvesting, could be allowed provided that such practices do not cause substantial adverse effect on the river and its immediate environment. The river area should be maintained in its near-natural condition. Timber outside the boundary, but within the visual seen area, should be managed and harvested in a manner which provides special emphasis on visual quality. Preferably, re-establishment of tree cover would be through natural revegetation. Cutting of dead and down materials for fuelwood should be limited. Where necessary, restrictions on use of wood for fuel may be prescribed.

b. **Hydroelectric Power and Water Resource Development**: No development of hydroelectric power facilities would be permitted. Flood control dams and levees would be prohibited. All water supply dams and major diversions are prohibited. Maintenance of existing facilities and construction of some new structures would be permitted, provided the area remains natural in appearance and the practices or structures harmonize with the surrounding environment.

c. **Mining**: Subject to existing regulations (e.g., 43 CFR 3809) and any future regulations that the Secretary of the Interior may prescribe to protect the values of rivers included in the Wild and Scenic River System, new mining claims and mineral leases can be allowed. All mineral activity on federally administered land must be conducted in a manner that minimizes surface disturbance, water sedimentation and pollution, and visual impairment. Reasonable mining claim and mineral lease access will be permitted. Mining claims, subject to valid existing rights, within the scenic river area boundary can be patented only as to the mineral estate and not the surface estate (subject to proof of discovery prior to the effective date of designation).

d. **Road and Trail Construction**: Roads or trails may occasionally bridge the river area, and short stretches of conspicuous roads or long stretches of inconspicuous and well-screened roads could be allowed. Maintenance of existing roads and any new roads will be based on the type of use for which the roads/trails are constructed and the type of use that will occur in the river area.

e. **Agricultural Practices and Livestock Grazing**: A wide range of agricultural and livestock grazing uses is permitted to the extent currently practiced. Row crops are not considered an intrusion of the "largely primitive" nature of scenic corridors as long as there is not a substantial adverse effect on the natural-like appearance of the river area.

f. **Recreation Facilities**: Larger-scale public use facilities, such as moderate-sized campgrounds, interpretive centers, or administrative headquarters are allowed if such facilities are screened from the river.

g. **Public Use and Access**: Recreation use including, but not limited to, hiking, fishing, hunting, and boating is encouraged in scenic river areas to the extent consistent with the protection of the river environment. Public use and access may be regulated and distributed where necessary to protect and enhance scenic river values.

h. **Rights-of-Way**: New transmission lines, natural gas lines, water lines, etc., are discouraged unless specifically authorized by other plans, orders, or laws. Where no reasonable alternative location exists, additional or new facilities should be restricted to existing rights-of-way. Where new rights-of-way are unavoidable, locations and construction techniques will be selected to minimize adverse effects on scenic river area related values and fully evaluated during the site selection process.

i. **Motorized Travel**: Motorized travel on land or water may be permitted, prohibited, or restricted to protect river values. Prescriptions for management of motorized use may allow for search and rescue and other emergency situations.

j. **Instream Flow Assessment**: To the extent practical, consistent with resource management objectives, quantify instream flow and protection requirements related to outstandingly remarkable and other resource values identified through the RMP process. Where possible, conduct a comprehensive, interdisciplinary, resource value-based assessment to delineate resource values, relate flows to resource conditions, and formulate flow strategies which incorporate legal, technical, and administrative aspects to secure instream flows which address values associated with the scenic river segment.

Wild Rivers

Wild rivers are defined by the Act to include: "Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America."

Management Objective for Wild River Areas

Management of wild river areas should give primary emphasis to protecting the values which make it outstandingly remarkable while providing river-related outdoor recreation opportunities in a primitive setting.

Management Standards for Wild River Areas

Allowable management practices might include construction of minor structures for such purposes as: improvement of fish and game habitat; grazing; protection from fire, insects, or disease; and rehabilitation or stabilization of damaged resources, provided the area will remain natural appearing and the practices or structures will harmonize with the environment. Developments such as trail bridges, occasional fencing, natural-appearing water diversions, ditches, flow measurement or other water management devices, and similar facilities may be permitted if they are unobtrusive and do not have a significant direct and adverse effect on the natural character of the river area. The following program management standards apply:

a. **Forestry Practices**: Cutting of trees will not be permitted except when needed in association with a primitive recreation experience (such as clearing for trails), for visitor safety, or to protect the environment (such as control of fire). Timber outside the boundary, but within the visual corridors should, where feasible, be managed and harvested in a manner to provide special emphasis to visual quality.

b. **Hydroelectric Power and Water Resource Development**: No development of hydroelectric power facilities would be permitted. No new flood control dams, levees, or other works are allowed in the channel or river corridor. All water supply dams and major diversions are prohibited. The natural appearance and essentially primitive character of the river area must be maintained. Federal agency groundwater development for range, wildlife, recreation or administrative facilities may be permitted if there are no adverse affects on outstandingly remarkable river related values.

c. **Mining**: New mining claims and mineral leases are prohibited on federal lands constituting the river bed or bank or located within 0.25-mile from the ordinary high water mark on both sides of the river. Valid existing claims would not be abrogated and, subject to existing regulations (e.g., 43 CFR 3809) and any future regulations that the Secretary of the Interior may prescribe to protect the rivers included in the National System, existing mining activity would be allowed to continue. All mineral activity on federally-administered land must be conducted in a manner that minimizes surface disturbance, water sedimentation, pollution, and visual impairment. Reasonable mining claim and mineral lease access will be permitted. Mining claims, subject to valid existing rights, within the wild river area boundary can be patented only as to the mineral estate and not the surface estate (subject to proof of discovery prior to the effective date of designation).

d. **Road and Trail Construction**: No construction of new roads, trails, or other provisions for overland motorized travel would be permitted within the river corridor. A few inconspicuous roads or unobtrusive trail bridges leading to the boundary of the river area may be permitted.

e. **Agricultural Practices and Livestock Grazing**: Agricultural use is restricted to a limited amount of domestic livestock grazing and hay production to the extent practiced prior to designation. Row crops are prohibited.

f. **Recreation Facilities**: Major public-use areas, such as campgrounds, interpretive centers, or administrative headquarters are located outside wild river areas. Simple comfort and convenience facilities such as toilets, tables, fireplaces, shelters, and refuse containers may be provided as necessary within the river area. These should harmonize with the surroundings. Unobtrusive hiking and horseback riding trail bridges could be allowed on tributaries, but would not normally cross the designated river.

g. **Public Use and Access**: Recreation use including, but not limited to, hiking, fishing, hunting and boating is encouraged in wild river areas to the extent consistent with the protection of the river environment. Public use and access may be regulated and distributed where necessary to protect and enhance wild river values.

h. **Rights-of-Way**: New transmission lines, natural gas lines, water lines, etc. are discouraged unless specifically authorized by other plans, orders or laws. Where no reasonable alternative exists, additional or new facilities should be restricted to existing rights-of-way. Where new rights-of-way are unavoidable, locations and construction techniques will be selected to minimize adverse effects on wild river area related values and fully evaluated during the site selection process.

i. **Motorized Travel**: Motorized travel on land or water could be permitted, but it is generally not compatible with this river classification. Normally, motorized use will be prohibited in a wild river area. Prescriptions for management of motorized use may allow for search and rescue and other emergency situations.

j. **Instream Flow Assessment**: To the extent practical and consistent with resource management objectives, instream flows sufficient to meet the purposes of the designated Wild or Scenic River should be protected and enhanced if possible. Based on the results of an instream flow assessment, implement flow protection strategies and actions that incorporate legal, technical, and administrative aspects to secure instream flow protection for applicable river segments. Protection strategies should be addressed and incorporated in river management plans.

Management Objectives Common to Wild, Scenic and Recreational Rivers

Fire Protection and Suppression: Management and suppression of fires within a designated river area will be carried out in a manner compatible with contiguous federal lands. On wildfires, suppression methods will be utilized that minimize long-term impacts on the river and river area. Presuppression and prevention activities will be conducted in a manner that reflects management objectives for the specific river segment. Prescribed fire may be utilized to maintain or restore ecological condition or meet objectives of the river plan.

Insects, Diseases and Noxious Weeds: The control of forest and rangeland pests, diseases, and noxious weed infestations will be carried out in a manner compatible with the intent of the Wild and Scenic River Act and management objectives of contiguous federal lands.

Cultural Resources: Historic and prehistoric resource sites will be identified, evaluated, and protected in a manner compatible with the management objectives of the river and in accordance with applicable regulations and policies. Where appropriate, historic or prehistoric sites will be stabilized, enhanced and interpreted.

Water Quality: Water quality will be maintained or improved to meet federal criteria or federally-approved state standards. River management plans shall prescribe a process for monitoring water quality on a continuing basis.

Fish and Wildlife Habitat Improvement: The construction and maintenance of minor structures for the protection, conservation, rehabilitation, or enhancement of fish and wildlife habitat are acceptable provided: they do not affect the free-flowing characteristics of the river, are compatible with the river's classification, that the area remains natural in appearance, and the practices or structures harmonize with the surrounding environment.

Water Rights: In the process of evaluating river segments, authorizing officials are held to established principles of law with respect to water rights. Under provisions of Section 13 of the Wild and Scenic River Act, as well as other statutes, river studies shall not interfere (except for licenses under Section 7[b] of the Wild and Scenic Rivers Act, pertaining to Section 5[a] WSRS river studies) with existing rights, including the right of access, with respect to the beds of navigable streams, tributaries, or river segments. In addition, under the Federal Land Policy and Management Act and the Federal Power Act, the BLM has conditioning authority to control any proposed projects which would be incompatible or potentially degrading to river and/or other identified resource values.

Oregon Scenic Waterways Act

In 1969, the state of Oregon passed the Oregon Scenic Waterways Act to establish a program to protect designated rivers throughout Oregon. The program is administered by the Oregon Department of Parks and Recreation, and its goals are to protect the free-flowing character of designated rivers for fish, wildlife and recreation. Dams, reservoirs, impoundments, and placer mining are prohibited on state scenic waterways. The

Act requires review of any new development proposed along designated rivers. It does not affect existing water rights, development, or uses.

Management Constraints on Private Lands

Designation of a river under the Wild and Scenic Rivers Act gives the federal government no authority to regulate or zone private lands. Land use controls on private lands are solely a matter of state and local zoning regulations. Although the Wild and Scenic Rivers Act includes provisions encouraging the protection of river values through state and governmental land use planning, these provisions are not binding on local governments. The federal government is responsible for assuring that designated rivers are managed in a manner which meets the intent of the Wild and Scenic Rivers Act.

River management plans may prescribe land use or development limitations to protect outstandingly remarkable river values. Many uses may be compatible with a wild, scenic or recreational classification as long as the rivers are administered to protect and enhance the values which caused them to be included in the national system. Most existing uses and activities on adjoining private lands may continue. Timber harvest activities on private lands within a Wild and Scenic River boundary would continue to be regulated by the Oregon Forest Practices Act.

The primary consideration in any river or land use limitation would be the protection and enhancement of a designated river's outstandingly remarkable values. BLM will work closely with landowners to assure that all uses will be consistent with the intent of the Wild and Scenic Rivers Act. Those uses that clearly threaten identified outstandingly remarkable values would be addressed on a case-by-case basis.

Specific management goals for new building, and other structural or road construction, on private lands along designated rivers would be addressed through the individual river management plans. Federal guidelines allow different degrees of development along rivers classified as wild, scenic or recreational. In consultation with landowners involved, every effort would be made to reduce adverse impacts to an acceptable level on proposals for major upgrading, realignment, and/or new construction of roads. Maintenance of existing roads would generally not alter a river's condition and thus would not be restricted.

On designated rivers, BLM could negotiate with a landowner to purchase specific development rights necessary to prevent any threat to the river's identified outstandingly remarkable values if all other efforts fail to reduce anticipated adverse impacts to an acceptable level. Another option, where mutually agreeable, would be a land exchange providing the private landowner with comparable lands outside the administrative boundary of a river.

The Wild and Scenic Rivers Act specifically prohibits the use of condemnation in the fee title purchase of lands if 50 percent or more of the land within the boundary is already in public ownership. While the Act provides the federal government with authority to purchase scenic, conservation, or access easements through condemnation proceedings, this is considered to be a measure of last resort. In the event condemnation was considered necessary, the only landowner rights purchased would be those considered necessary to prevent the threat to the river.

If BLM acquires an easement on private land, depending upon its terms and conditions, public access rights may or may not be involved. For example, a scenic easement could only involve the protection of narrowly-defined visual qualities with no provisions for public use. Any trail or road easement would involve public use provisions. Any provisions for public use of private lands must be specifically purchased from the landowner. BLM would work closely with landowners to minimize public use of non-federal lands through brochures, maps, signs and/or other appropriate means, except in locations where rights to such use are acquired.

Wild and Scenic River designation does not affect a private landowner's rights to control trespass. Landowners can charge a fee for crossing private lands to fish designated rivers except where a public access easement exists. The designation of a river into the National Wild and Scenic River System does not change landowner rights unless all or a portion of these rights are acquired from the landowner.

The designation of a river into the Wild and Scenic River System has no bearing upon the determination of navigability. On navigable rivers, the river bed and banks to the mean high water mark are state lands and are available under state laws for public use. Private landowners control public access to their property along the banks of non-navigable rivers.

Ownership and use of valid water rights are not affected by a Wild and Scenic River designation.

Appendix J. Off-Highway Vehicle Use Designations Under the PRMP[1]

Site/Area Name	OHV Designation Categories: Limited to Designated Roads and Trails	Limited to Existing Roads and Trails	Closed	Open
Loon Lake/East Shore SRMA	140			
Dean Creek Elk Viewing SRMA			1,040	
Smith River Falls	80			
Vincent Creek	5			
Big Bend	200			
Smith River Log Dump	5			
Umpqua Lighthouse				80
Wassen Creek ACEC	3,440			
Big Tree			20	
Park Creek	60			
Burnt Mountain Cabin	40			
Coos Bay Shorelands SRMA	1,660			
Tioga Basin	30			
McKinley Camp	10			
East Fairview Boat Ramp	5			
Rock Prairie Boat Ramp	0			
Gregory Point SRMA	20			
North Fork Coquille ACEC	290			
Cherry Creek NRA			570	
Tioga Creek ACEC			40	
China Wall ACEC			240	
Upper Rock Creek ACEC	460			
Powers Environmental Education Area			70	
Bear Creek	80			
New River	250		630	
Sixes River	160			
Cape Blanco Lighthouse	50			
North Fork Hunter Creek ACEC	1,730			
Hunter Creek Bog ACEC	570			
North Fork Chetco River ACEC	600			
Palmer Butte	40			
Wilderness/Wilderness Study Areas			10	
Progeny Test Sites/Seed Orchards			370	
Snowy Plover Exclosures			10	
Remainder of the District	316,675			
Total Acres	326,600		3,000	80

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[1] Acres are approximate.

Appendix K. Silvicultural Systems and Harvest Methods Used in the Proposed Resource Management Plan

General Forest Management Area

Silvicultural systems in the General Forest Management Area would be designed to promote production of merchantable timber, while retaining some larger trees and snags and maintaining forest health, productivity, and biological diversity. All treatments would be compatible with the ecological requirements of the communities of native plant and animal species present, and would be tailored to the condition of each stand. The results of watershed analysis would be used to help select and design silvicultural systems through better understanding of landscape-level patterns and ecological processes.

The quality of wood, value of logs ultimately produced, and economic efficiency would be important considerations for all planned treatments.

Lands available for harvest would be managed generally as even-aged stands with partial overstories of larger trees.

Silvicultural Treatments

Management actions in General Forest Management Areas would consist of six general types of treatments: regeneration harvest with partial retention; site preparation following harvest; reforestation treatments; management of young stands; commercial thinnings in mid-aged stands; and management of overstory trees, snags, and large woody debris. Each of these treatments is described below.

Regeneration Harvest

Regeneration harvests on available forest lands would generally occur in stands at or above the age of the culmination of mean annual increment (CMAI). On the Coos Bay District, this varies from stand age 60 to 100 years. Regeneration harvest would not be planned for stands less than 60 years of age.

Site Preparation

Following regeneration harvest, residual vegetation and logging debris would be treated if necessary to reduce fire hazard, provide room for planting of tree seedlings, lessen initial competition from other vegetation, and limit the cover for seedling-damaging rodents. Methods used would include prescribed fire, manual cutting and piling, and mechanical clearing.

Reforestation

Normally, all sites that receive regeneration harvest and do not require burning would be reforested within one year of cutting. If slashing and/or burning is required to prepare a site for planting, reforestation may be delayed beyond one year pending burn prescriptions and smoke management clearance. Most areas would be planted with seedlings grown from genetically-selected seed. (See Appendix L for a description of the Coos Bay District's Genetics Program.) The selection of tree species, planting density, and stock types would depend on site characteristics, the composition of the original stand, and projected future management of each stand. Areas having identified root disease would be planted with species resistant or immune to the disease or in a manner that would reduce the likelihood of spreading the disease. Animal damage control measures would be implemented to reduce their populations when they are high enough to threaten forest stands. A district Animal Control Plan would be developed through an interdisciplinary team approach and in coordination with the

Oregon Department of Fish and Wildlife. The plan would address animals such as mountain beaver, black bear, deer, and elk.

Management of Young Stands

During the first 10-15 years after planting, young stands would receive treatments as necessary and as funding allows to promote establishment, survival, and growth by managing competing vegetation, protecting seedlings from severe local site conditions, and preventing excessive animal damage. These treatments would include manual cutting of brush and seedling protection measures such as placement of plastic mesh tubes on seedlings and trapping of rodents.

Suitable stands aged 10-20 years would receive treatments designed to improve growth, value, and wood quality when funding is available. These treatments include precommercial thinning, release, pruning, and fertilization.

Commercial Thinnings

Stands approximately 30-70 years of age would be considered for commercial thinning potential. One or two thinnings may be scheduled over the life of an individual stand.

The objectives of commercial thinning may include one or more of the following:

- Increase the proportion of merchantable volume in the stand.
- Produce larger, more valuable logs.
- Anticipate mortality of small trees as the stand develops.
- Maintain good crown ratios and stable, windfirm trees.
- Accelerate development of trees that can later provide large-diameter snags and down logs.
- Manage species composition.
- Promote development of desired understory vegetation.

Nitrogen fertilizer may be applied following completion of thinnings.

In any case, the decision to thin any given stand would depend on site-specific factors such as slope and topography, distance to roads, soil types, stand density, species composition, and average tree diameter.

Management of Overstory Trees, Snags, and Large Woody Debris

During partial-cut or regeneration harvests, existing snags would be reserved from cutting whenever feasible and to the extent necessary to meet snag habitat objectives. Some snags may need to be removed, however, for road construction, safety reasons, or to make way for log yarding in some situations. The large trees reserved from regeneration harvest would normally not be considered available for future harvest. Some may be damaged or killed during slash burning, while others may blow down or break off during windstorms. Such trees would then become part of the supply of snags and large woody debris. Many of the reserved trees would be likely to survive and grow, providing additional structural and functional habitat diversity as younger stands develop beneath them.

Selection of Harvest Areas

Listed below are harvest area selection guidelines for regeneration harvest and commercial thinning.

Regeneration Harvest

For available forest lands, treatment areas would be selected, when feasible, from the least productive stands first. Stands that appear to have low stocking, damage, disease, generally low growth rates, or a predominance of noncommercial species resulting from past management would receive higher priority for harvest.

Commercial Thinning

Treatment areas would be selected from well-stocked or overstocked stands where density reduction is needed to maintain good diameter growth rates, live crown ratios, and stand stability. Selection of thinning areas may depend on access and logging feasibility.

Landscape Design

Harvest units, including regeneration harvest and commercial thinnings, would be placed where needed to meet landscape objectives on three levels of scale: the physiographic province, the landscape block or watershed, and the stand.

Regeneration Harvest Design

Silvicultural prescriptions for regeneration harvest would be based on knowledge of plant communities, successional relationships, and ecosystem functions. Knowledge of these relationships would be used to help prevent vegetation management problems before they occur. Harvest plans would provide for maintenance of long-term site productivity and forest health.

Regeneration harvest units would vary in size, depending on factors such as ownership, topography, and road locations. Appropriate treatment areas would be determined through watershed analysis.

Harvest unit shapes would be irregular, conforming where possible to topographic features, but limited in many cases by logging feasibility, ownership boundaries, reserve boundaries, or other land use allocations. An average of 6 to 8 live trees per acre would be reserved from harvest as clumps, strips, and scattered individual trees. The distribution of reserved trees would be designed to help meet habitat goals and to minimize interference with log yarding.

In addition to the previous green tree retention management action/direction, green trees would be retained for snag recruitment in timber harvest units where there is an identified, near-term (less than three decades) snag deficit. These trees do not count toward green-tree retention requirements. Some of the trees reserved for snag recruitment may be topped, girdled, or felled over time to help meet long-range goals for snags and large woody debris.

Partial-Cut Harvest Design

Commercial thinnings would generally be designed to maintain good volume productivity of the stand. To accomplish this, a stand might be thinned before relative density exceeds 0.60, leaving a residual relative density of approximately 0.40. Depending on stand age, tree size, and the specific objectives of the thinning, stand density after thinning would range from approximately 50 to 150 trees per acre.

Commercial thinning treatment areas would vary in size, depending on factors such as operability and site conditions. Appropriate treatment areas would be determined through watershed analysis. A variety of thinning intensities may be designated within a treatment unit to reflect current within-stand spatial patterns or to meet stand development objectives.

In some portions of stands, thinning may consist only of removal of the smaller (intermediate and suppressed) trees in the stand. In other areas, many of the larger codominant and dominant trees may also be removed.

Where root diseases such as laminated root rot (*Phellinus weirii*), black stain (*Ceratocystis verticicladiella*), or Port- Orford-cedar root rot (*Phytophthora lateralis*) are present in stands to be thinned, the thinning will incorporate state-of-the-art recommendations for treatment. Openings created will be planted with seedlings of species resistant or immune to the disease, or in a manner to reduce the rate of disease spread.

Connectivity/Diversity Blocks

Silvicultural systems in the Connectivity/Diversity blocks would be designed to promote development of late-successional forest structure within a longer rotation, while providing an output of merchantable timber and maintaining forest health and productivity. All treatments would be compatible with the ecological requirements of the communities of native plant and animal species present; they also would be tailored to the condition of each stand. The results of watershed analysis would be used to help select and design silvicultural systems through better understanding of landscape-level patterns and ecological processes.

Important considerations for all planned treatments would include the quality of wood, value of logs ultimately produced, and economic efficiency.

Lands available for harvest would be managed generally as even-aged stands with substantial overstories of larger trees.

Silvicultural Treatments

Management of the Connectivity/Diversity Blocks would consist of six general types of treatments: regeneration harvest with partial retention; site preparation following harvest; reforestation treatments; management of young stands; density management thinnings in mid-aged stands; and management of overstory trees, snags, and large woody debris. Each of these treatments is described below.

Regeneration Harvest

Regeneration harvests on available forest land would be planned for a 150-year area control rotation. This means that no more than approximately 1/15 of the available acres in a particular connectivity block would receive regeneration harvest in any decade. On the Coos Bay District, portions of some stands would be cut at stand ages as low as 60 years during the first decade, where older stands are not available or to develop a better distribution of age classes over time. Regeneration harvest would not be planned for stands less than 60 years of age.

Site Preparation

Following regeneration harvest, sites would receive treatment of understory vegetation and logging debris if necessary to reduce fire hazard, provide room for planting of tree seedlings, lessen initial competition from other vegetation, and limit the cover for seedling-damaging rodents. Methods used would include prescribed fire (underburning), machine piling, and manual cutting.

Reforestation

Normally, all sites that receive regeneration harvest and do not require burning would be reforested within one year of cutting. If slashing and/or burning is required to prepare sites for planting, reforestation may be delayed beyond one year pending smoke management clearance. The selection of tree species, planting density, and stock types would depend on site characteristics, the composition of the original stand and remaining overstory, projected future management of each stand, and distribution of root disease infection. Harvested areas having identified root disease would be planted with species resistant or immune to the disease, or in a manner that will reduce spread of the disease. Animal damage control measures would be implemented to reduce their populations when they are high enough to threaten forest stands. A district Animal Control Plan would be developed through an interdisciplinary team approach, and in coordination with the Oregon Department of Fish and Wildlife. The plan would address animals such as mountain beaver, black bear, deer, and elk.

Management of Young Stands

During the first ten to fifteen years after planting, understory stands would receive treatments as necessary and as funding allows to promote establishment, survival, and growth by managing competing vegetation, preventing excessive animal damage, and managing overstory density. These treatments would include manual cutting of brush and seedling protection measures.

Suitable stands aged 10 to 20 years may receive treatments designed to improve growth, value, and wood quality, when funding is available. These treatments may include release, precommercial thinning, and pruning.

Density Management Thinnings

Stands approximately 30 to 110 years of age would be considered for density management thinnings. An individual stand may be thinned 3-4 times at intervals of 20 to 30 years, within one 150-year rotation.

The purposes of density management may include one or more of the following: to accelerate growth of trees which would later provide large-diameter snags and down logs; to promote development of understory vegetation and multiple canopy layers; to produce larger, more valuable logs, to harvest mortality of small trees as the stand develops; to maintain good crown ratios and stable, windfirm trees; and to manage species composition.

The decision to thin a particular stand would depend on site-specific factors such as slope and topography, distance to roads, soil types, stand density, species composition, average tree diameter, and degree of structural variability in the stand.

Management of Overstory Trees, Snags, and Large Woody Debris

During partial-cut or regeneration harvests, existing snags would be reserved from cutting whenever feasible to the extent necessary to meet snag habitat objectives. Some snags would need to be removed, however, for safety reasons, for road construction, or to make way for log yarding in some situations.

The large trees reserved from regeneration harvest would not normally be considered available for future harvest. Some may be damaged or killed during slash burning, while others may blow down or break off during windstorms. Such trees would become part of the supply of snags and large woody debris. Most of the reserved trees would be likely to survive and grow, providing substantial structural and functional habitat diversity as the canopies of younger stands develop beneath them.

Selection of Harvest Areas

Listed below are harvest area selection guidelines for regeneration harvest and density management thinning.

Regeneration Harvest

Treatment areas would be selected from mature stands having the least degree of late-successional forest structure. In addition, the more productive stands would be deferred so that the less productive stands would be harvested first, when feasible. Stands which appear to have low stocking, damage, disease, generally low growth rates, or a predominance of noncommercial species resulting from past management would receive higher priority for harvest.

Density Management Thinnings

Treatment areas would be selected from well-stocked stands where density reduction is needed to promote development of late-successional forest structure. This would generally be stands which are predominantly even-aged, evenly spaced, and of a fairly uniform diameter and height. Selection of thinning areas would also depend on access and logging feasibility.

Landscape Design

Harvest units, including regeneration harvest and density management thinnings, would be placed where needed to meet landscape objectives on three levels of scale: the physiographic province, the landscape block or subwatershed, and the stand.

Regeneration Harvest Design

Silvicultural prescriptions for regeneration harvest would be based on knowledge of plant communities, successional relationships, and ecosystem functions with consideration of forest health. Knowledge of these relationships would be used to help prevent vegetation management problems before they occur. Harvest plans would provide for maintenance of long-term site productivity and forest health.

Regeneration harvest units would vary in size, depending on factors such as ownership, topography, and road locations. Appropriate treatment areas would be determined through watershed analysis.

Harvest unit shapes would be irregular, conforming where possible to topographic features, but limited in many cases by logging feasibility and ownership boundaries. An average of 12 to 18 live trees per acre would be reserved from harvest as clumps, strips, and scattered individual trees. The distribution of reserved trees would be designed to help meet habitat goals and to minimize interference with log yarding. Some of the trees reserved for snag recruitment may be topped, girdled, or felled over time to help meet long-range goals for snags and large woody debris.

Partial-Cut Harvest Design

Density management thinnings would generally be designed to encourage rapid development of vertical and horizontal stand diversity. To accomplish this, a stand might be thinned before relative density exceeds 0.55, leaving a residual relative density of approximately 0.35. Patches of denser forest would be retained in some places to meet particular wildlife habitat criteria. Depending on stand age and the specific objectives of thinning, stand density after thinning may range from approximately 30 to 200 trees per acre. Density management areas would vary in size, depending on factors such as operability and site conditions. Appropriate treatment areas would be determined through watershed analysis. A variety of treatment intensities may be designated within a thinning unit to reflect current within-stand spatial patterns or to meet stand development objectives.

For example, some dense patches of perhaps 0.25 acre to several acres may be reserved from cutting. Other patches of 0.5 to 1 acre may be completely removed as group selections, and those areas planted with tree seedlings after the thinning is completed. Group selection patches larger than one acre in size would contain reserved trees and snags as provided in regeneration harvest units.

In each density management thinning entry, some of the larger codominant and dominant trees would be removed.

Where root diseases such as laminated root rot (*Phellinus weirii*), black stain (*Ceratocystis verticicladiella*), or Port- Orford-cedar root rot (*Phytophthora lateralis*) are present in stands to be thinned, the thinning will incorporate state-of-the-art recommendations for treatment. Openings created will be planted with seedlings of species resistant or immune to the disease, or in a manner to reduce the rate of disease spread.

Late-Successional Reserves

Forest stands less than 80 years of age within the Late-Successional Reserves would be considered for silvicultural treatments where stocking, structure, or composition are expected to prevent or significantly retard development of late-successional conditions. Such stands would generally be composed of trees less than 10 to 20 inches diameter at breast height, and would show no significant development of a multiple-canopy forest structure. Stands that have desired late-successional structure or that will soon develop it would not be treated unless such treatment is necessary to accomplish risk-reduction objectives as described below.

Silvicultural Treatments

In Late-Successional Reserves, silvicultural treatments would include density management and reduction of large-scale disturbance risk.

Density Management

Density management prescriptions would be designed to produce stand structure and components associated with late-successional conditions, including large trees, snags, logs, and variable-density, multistoried, multispecies stands.

By removing a portion of the stand, the remaining trees would be provided room to maintain or increase diameter growth rates. In addition, openings in the canopy would permit development of an understory of seedlings and saplings and other vegetation. Some of the overstory trees may be converted to snags over time, to help meet snag habitat targets, or felled to provide large woody debris. Trees cut but surplus to habitat needs would be removed for commercial use.

A wide variety of silvicultural practices would be employed, rather than relying on a limited variety of techniques. Silvicultural activities would be conducted in suitable stands, whether the action would generate a commercial return or not.

In general, manipulated acreage would be limited to five percent of the total area in any Late-Successional Reserve in the initial 5-year period of implementation unless the need for larger-scale actions is explicitly justified.

Reduction of Large-Scale Disturbance Risk

In some areas, stands would be made less susceptible to natural disturbances by focusing salvage activities on reduction of catastrophic insect, disease, and wildfire threats, and by designing treatments to provide effective fuel breaks wherever possible. These treatments would be designed so as not to result in degeneration of currently suitable spotted owl habitat or other late-successional conditions.

Risks would be reduced in older stands if the proposed management activity would clearly result in greater assurance of long-term maintenance of habitat; is clearly needed to reduce risks; and would not prevent Late-Successional Reserves from playing an effective role in attaining the objectives for which they were established.

Unless exempted from review, proposed risk reduction projects would be submitted to the Regional Ecosystem Office.

Riparian Reserves

Some stands within the Riparian Reserves would be considered for silvicultural treatments that could contribute to meeting objectives of the Aquatic Conservation Strategy.

Silvicultural Treatments

In Riparian Reserves, the silvicultural treatments would include density management and conifer underplanting.

Density Management

Stands where portions of young, even-aged conifer plantations are located within the Riparian Reserves would be considered for density management treatments. The objectives of such treatment would be to promote development of large conifers and to improve diversity of species composition and stand density. Merchantable logs would be removed only where such action would not be detrimental to the purposes for which the Riparian Reserves were established.

Conifer Underplanting

Where hardwood stands dominate streamside areas and there is a lack of large conifers to provide inputs of large wood for instream structure, efforts would be made to re-establish scattered conifers within the Riparian Reserve. This would involve cutting or girdling some hardwoods to create openings in the canopy, followed by cutting of brush and planting of a variety of conifer seedlings in the openings created. In most cases, follow-up stand maintenance treatments would be necessary to ensure successful establishment of an adequate number of conifers in the riparian area.

Timber Harvest and Management Details of the PRMP

Table K-1 displays the average annual harvest for the PRMP in both MMBF and MMCF for decades 1, 2, 3, 5, and 10. Table K-2 displays the average annual harvest in both acres and MMCF from each of the management areas and the amount of harvest associated with regeneration harvest and commercial thinning or density management for each management area.

Table K-1. Proposed Resource Management Plan Average Annual Harvest

Decade	MMCF [1]	MMBF	MMBF/MMCF Ratio
1st	5.33	32.1	6.02
2nd	5.33	32.3	6.06
3rd	5.33	32.1	6.02
5th	5.33	31.0	5.81
10th	5.33	31.0	5.81

[1] Even flow is based on MMCF of conifer volume.

Table K-2. Expected Proposed Resource Management Plan Average Annual Harvest (acres and MMCF[1])

	Decade									
	1st		2nd		3rd		5th		10th	
	Ac.	MMCF	Ac.	MMCF	Ac.	MMCF	Ac.	MMCF	Ac.	MMCF
Connectivity/Diversity Blocks										
Regeneration Harvest	27	.15	33	.12	41	.23	33	.22	42	.29
Density Management	27	.07	11	.02	93	.19	5	.01	8	.02
General Forest Management Areas										
Regeneration Harvest	552	4.24	723	4.96	749	4.61	632	4.93	447	4.23
Commercial Thinning	588	.87	103	.23	149	.30	128	.17	356	.79
Total	1,194	5.33	870	5.33	1,032	5.33	798	5.33	853	5.33

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[1] Even flow is based on MMCF of conifer volume.

Appendix L. Coos Bay District Forest Genetics Program

Introduction

For thousands of years humans have selected and used the genetic variation which is naturally present in plants and animals. Genetic diversity is the foundation for plant and animal improvement programs. Modern crop and livestock improvement programs have substantially increased yields and productivity with selection and breeding. The need for food production and natural resources is increasing as the human population increases. Genetic improvement programs have met, and will continue to help meet, these demands.

The genes in all organisms are the basis of their diversity. Genetic diversity is a key component of an ecosystem. Broad genetic diversity is considered to be an asset because variability is a buffer against change. Problems can occur when genetic diversity is too narrow. Genetic uniformity decreases resilience to change and increases the potential for problems due to pests and diseases. Environmental conditions influence the expression of the genetic code. The physical characteristics of an organism are dependent on the interaction of its genes with the environment. Ecosystems are dynamic communities which change over time, and plants and animals are impacted by the changes. Species with wide tolerances can adapt to changes, while those with narrow tolerances can be heavily impacted.

The amount and pattern of genetic diversity in a species develops in part as an organism responds to the environment. This adaptation occurs over a long period of time as the environmental conditions select either for or against specific genetic traits. Each species has a unique genetic structure. Genetic studies are conducted to describe and quantify the amount of genetic variation within a species. This information is necessary to direct management and to help guide operational projects.

Genetic diversity can be described as a natural resource. Management and conservation of genetic resources is vital for many reasons. Genetic improvement programs are a great benefit to society and genetic materials have a large economic value. Genetic material from wild stock is an important source of variability which can be infused into existing improved varieties. Many medicinal compounds are derived from plants, and there is the potential for more undiscovered uses. Conserving genetic diversity for all species allows evolutionary processes to continue within the conditions of the natural environment.

Tree improvement is the application of genetic principles and methods to forest trees. Many of the desirable traits in trees can be enhanced with tree improvement. The Bureau of Land Management has participated in cooperative tree improvement programs for forest trees in the Pacific Northwest since the late 1950s. The emphasis to date has been in improvement of growth and disease resistance. Ecosystem management principles are changing the focus of the tree improvement program. The existing tree improvement and seed orchard programs will be integrated into a broader based forest genetics program. Genetic diversity issues for many organisms will likely become more important in the future. A forest genetics program is consistent with ecosystem management principles and can be expanded to cover the genetics of other plants and animals.

This appendix describes the objectives of the forest genetics program, the present status, and proposed direction. Readers who are interested in technical details of the tree improvement program are referred to the *BLM Western Oregon Tree Improvement Plan* (1987). Additional information on genetic resource issues can be found in *The Value Of Genetic Resources* (Oldfield 1984) and *Genetics and Conservation Of Rare Plants* (Falk,Holsinger 1991).

Program Objectives

The objectives of the forest genetics program underlay a broad spectrum of land management activities. The biological foundation of ecosystem management rests upon a clear understanding of the genetic diversity present within the system. The following objectives are broadly defined and include tree improvement, gene management, and gene conservation activities.

- Provide for seed production as needed for species planted on BLM-administered lands. Develop seed collection and seed deployment guidelines as needed.
- Develop genetically improved materials as needed to meet BLM's resource management objectives.
- Maintain and restore the genetic diversity within managed forest stands.
- Analyze needs and implement gene conservation strategies as appropriate.
- Collect information on genetic variation from important species.
- Contribute to the development of genetic information needed for landscape analysis, ecological assessments, research studies, and ecosystem management projects.
- Maintain flexibility within the program so that information fulfills the current needs and anticipates future needs.

Status of the Existing Program

The BLM tree improvement program has generated a substantial and important genetic information base for several conifer species. The data is significant to ecosystem management because it describes the nature and extent of genetic variation present for traits of the species.

Because genetic diversity is continuous across the landscape, tree improvement programs are implemented at this level. Each program is a small ecologically similar area called a breeding unit. Most tree improvement programs are cooperatives with BLM and adjacent landowners. A cooperative structure is beneficial because it greatly increases the number of trees in the genetic base and the trees are located across a broader geographic area. Program costs are shared among cooperators which is more efficient. BLM is cooperating in more than 50 breeding units which include several million acres of forest land in Western Oregon.

The following accomplishments summarize the status of the program.

- Several conifer species (Douglas-fir, western white pine, and sugar pine) have been selected for genetically controlled characteristics such as growth rate, tree form and resistance to disease.
- Field tests have been established using progeny of the selected trees. These progeny test sites have been measured at regular intervals.
- Seed orchards have been established using parent trees. The orchards are producing locally adapted seed for several major species (Douglas-fir, western hemlock, western red cedar, ponderosa pine, grand fir, and incense cedar).
- Each year, improved seed is sown for replanting a portion of the harvested forest acres.
- The seed orchards are managed for seed production. Stimulation techniques are part of the management to encourage cone production. Trees which have slow growth in field tests or show undesirable characteristics are removed from the orchard. This practice is known as "roguing."
- Second generation programs have been initiated in some breeding units. Selection and breeding work is underway.
- Facilities for cone and seed processing and greenhouses for growing custom tailored lots of many species are located at the seed orchards.

Proposed Program Direction

The future forest genetics program will be more complex under ecosystem management than under the previous management plans. Improvement of growth and disease resistance will continue as an important component of the forest genetics program. Gene conservation and gene resources management issues will be emphasized to a greater degree. Gene conservation involves taking specific actions to conserve the genetic variation of a species with the purpose of maintaining the range of natural diversity within the species. Gene management is the integration of genetic principals into resource management actions. Because ecosystems are complex, genetic diversity is important for all organisms. Genetic principles must be considered when planning and implementing resource management projects so that genetic diversity is maintained.

The following is a summary of the direction for the forest genetics program.

- Progeny test sites will be maintained, and measurements of growth and other characteristics will continue. Long-term management plans for the sites will be developed.
- Seed orchards will be maintained and managed to produce seed as needed for ecosystem management projects.
- Improved stock will be planted on most of the harvested acres.
- Tree improvement programs have emphasized cooperative efforts for operational programs and research studies with state, private, and other government agencies. These partnerships will continue.
- Genetic expertise and genetically appropriate guidelines will be provided for ecosystem management implementation.
- A forest genetic plan will be prepared. It will include a strategy for gene conservation, maintenance of genetic diversity, and definition of a monitoring baseline to quantify genetic variation.

Ecosystem management concepts have challenged the forest genetics program with more issues than were addressed by the previous forest management plans. The former program must be meshed with the additional needs defined by ecosystem management so previous gains are maintained and future needs are addressed. Policy and land use allocations will likely change over time. A flexible broad-based forest genetics program is the best option to accommodate changing conditions. Tree improvement, gene management, and gene conservation objectives share a common genetic basis. Since each aspect of the program can complement the others, all aspects should include provisions for maintaining and enhancing genetic diversity. Tree improvement programs are intensive management practices which can achieve higher productivity and help meet the demand for wood products; genetic information is needed to support and guide ecosystem management projects; and conservation of genetic diversity is vital to ecosystem health and stability.

Appendix M. Proposed Restrictions and Requirements on Mineral and Energy Exploration and Development Activity

Introduction

This appendix discusses the leasing stipulations as they would be applied to BLM-administered lands in the planning area under the Proposed Resource Management Plan (PRMP). Operating standards pertinent to locatable and salable minerals are also described. Mineral exploration and development on federal lands must also comply with laws and regulations administered by several agencies of the State of Oregon; however, these requirements are not discussed in this document.

Leasable Mineral Resources

Oil and Gas Leasing

The Mineral Leasing Act of 1920 (as amended) provides that all publicly-owned oil and gas resources be open to leasing unless a specific land order has been issued to close the area. Through the land use planning process, the availability of these resources for leasing is analyzed, taking into consideration development potential and surface resources. Constraints on oil and gas operations are identified and placed in the leases as notices and stipulations. Oil and gas leases are then issued from the BLM Oregon State Office in Portland. Specific proposed notices and stipulations are listed by alternative later in this appendix.

The issuance of a lease conveys to the lessee an authorization to actively explore and/or develop the lease, in accordance with the attached stipulations and the standard terms outlined in the Federal Onshore Oil and Gas Leasing Reform Act. Restrictions on oil and gas activities in the planning area will take the form of timing limitations, controlled surface use, or "no surface" occupancy stipulations used at the discretion of the Authorized Officer to protect identified surface resources of special concern. Stipulations will be attached to each lease before it is offered for sale by the field office that reviews the lease tract. The review will be conducted by consulting the direction given in this resource management plan. In addition, all BLM-administered lands within the planning area will be subject to the lease notices as shown on the following pages. Every attempt will be made to place stipulations in the lease and to minimize use of Standard Conditions of Approval attached to the site-specific permit. All federal lessees or operators are required to follow procedures set forth by: Onshore Oil and Gas Orders, Notice to Lease (NTL's), The Federal Oil and Gas Royalty Management Act (as amended), The Federal Onshore Oil and Gas Leasing Reform Act and Title 43 Code of Federal Regulations, Part 3100.

Oil and Gas Operations

Geophysical Explorations

Geophysical operations may be conducted regardless of whether the land is leased or not. Notices to conduct geophysical operations on BLM surface are received by the resource area. Administration and surface protection are accomplished through close cooperation of the operator and the BLM. Seasonal restrictions may be imposed to reduce fire hazards, conflicts with wildlife, watershed damage, etc. An operator is required to file a "Notice of Intent to Conduct Oil and Gas Exploration Operations" for all geophysical activities on public land administered by BLM. The notice should adequately show the location and access routes, anticipated surface damages, and time frame. The operator is required to comply with written instructions and orders given by the Authorized Officer; the operator must also be bonded. Signing of the Notice of Intent by the operator signifies agreement to comply with the terms and conditions of the notice, regulations, and other requirements prescribed by the Authorized Officer. A prework conference and/or site inspection may be required. Periodic checks during and upon completion of the operations will be conducted to ensure compliance with the terms of Notice of Intent, including reclamation.

Drilling Permit Process

The federal lessee or operating company selects a drill site based on spacing requirements, subsurface and surface geology, geophysics, topography, and economic considerations. Well spacing is determined by the Authorized Officer after considering topography, reservoir characteristics, protection of correlative rights, potential for well interference, interference with multiple use of lands, and protection of the surface and subsurface environments. Close coordination with the State would take place. Written field spacing orders are issued for each field. Exceptions to spacing requirements involving federal lands may be granted after joint State and BLM review.

Notice of Staking

Once the company makes the decision to drill, they must decide whether to submit a Notice of Staking (NOS) or apply directly for a permit to drill. The NOS is an outline of what the company intends to do, including a location map and sketched site plan. The NOS is used to review any conflicts with known critical resource values and to identify the need for associated rights-of-way and special use permits. The BLM utilizes information contained in the NOS and obtained from the onsite inspection to develop stipulations to be incorporated into the application for permit to drill. Upon receipt of the NOS, the BLM posts the document and pertinent information about the proposed well in the District Office for a minimum of 30 days prior to approval, for review and comment by the public.

Application for Permit to Drill (APD)

The operator may or may not choose to submit an NOS; in either case, an Application for Permit to Drill (APD) must be submitted prior to drilling. An APD consists of two main parts: a 12-point surface plan that describes any surface disturbances and is subject to review by resource specialists for adequacy with regard to lease stipulations designed to mitigate impacts to identified resource conflicts with the specific proposal; and an 8-point subsurface plan which details the drilling program and is reviewed by the staff mineral specialist or geologist. This plan includes provisions for casing, cementing, well control, and other safety requirements. For the APD option, the onsite inspection is used to assess possible impacts and to develop stipulations to minimize these impacts. If the NOS option is not utilized, the 30-day posting period begins with the filing of the APD. Private surface owner input is actively solicited during the APD stage.

Geothermal Leasing

The Geothermal Steam Act of 1970 (as amended) provides for the issuance of leases for the development and utilization of geothermal steam and associated geothermal resources. Geothermal leasing and operational regulations are contained in Title 43 CFR, Part 3200. Through the land use planning process, the availability of the geothermal resources for leasing is analyzed, taking into consideration development potential and surface and subsurface resources. Constraints on geothermal operations are identified and placed in the leases as stipulations. Geothermal leases are then issued by the BLM Oregon State Office in Portland.

Geothermal resources within a known geothermal resource area (KGRA) are offered by competitive sale. Outside of KGRAs, leases can be issued non-competitively (over-the-counter). Prior to a competitive lease sale, or the issuance of a non-competitive lease, each tract will be reviewed and appropriate lease stipulations will be included. The review will be conducted by consulting the direction given in this resource management plan. The issuance of a lease conveys to the lessee authorization to actively explore and/or develop the lease in accordance with regulations and lease terms and attached stipulations. Subsequent lease operations must be conducted in accordance with the regulations, Geothermal Resources Operational Orders, and any Conditions of Approval developed as a result of site-specific NEPA analysis. In the planning area, restrictions in some areas will include timing limitations, controlled surface use, or no surface occupancy stipulations used at the discretion of the Authorized Officer to protect identified surface resources of special concern.

In addition to restrictions related to the protection of surface resources, the various stipulations and conditions could contain requirements related to protection of subsurface resources. These may involve drainage protection of geothermal zones, protection of aquifers from contamination, or assumption of responsibility for any unplugged wells on the lease.

Development of geothermal resources can be done only on approved leases. Orderly development of a geothermal resource, from exploration to production, involves several major phases that must be approved separately. Each phase must undergo the appropriate level of NEPA compliance before it is approved and any subsequent authorization is issued.

Leasing Stipulation Summary

The mineral leasing notices and stipulations for the PRMP are shown on the following pages. Those notices and stipulations are to be the minimum necessary to issue leases in the operating area. The standard leasing stipulations (Form 3100-11) alone would be utilized on most lands. The powersite stipulation (Form 3730-1) would be used on all lands included within powersite withdrawals, and the stipulation found on Form 3109-2 would be utilized for all lands under the jurisdiction of the Department of the Army, Corps of Engineers. Lease notices to protect threatened and endangered plant and animal species, and cultural resources, would apply to all lands administered by BLM in the planning area. A controlled surface use (CSU) special stipulation would be utilized to protect fragile soils on slopes exceeding 60 percent and to control visual impacts on VRM Class II areas. No surface occupancy (NSO) special stipulations would be utilized on the following areas: lands included within R&PP and FLPMA leases; developed and proposed recreation areas and sites; riparian reserves; regional forest nutritional research study installations; various land use authorizations and special areas (ACECs, RNAs, and EEAs); New River; Dean Creek Elk Viewing areas; The North Spit; lands classified as VRM Class I; snowy plover nest sites, Aleutian goose use areas, and critical habitat of other threatened or endangered species found on the district.

The regulation in 43 CFR 3101.1-2 permits the BLM to require relocation of proposed oil and gas operations up to 200 meters, so No Surface Occupancy leasing stipulations are not necessary to protect Regional Forest Nutritional Research Study Installations, progeny test sites, bald eagle nest and roost sites and associated habitat, and marbled murrelet nest sites.

Special Status Species (federal threatened and endangered, proposed federal threatened and endangered, federal candidate, Bureau sensitive, and state threatened and endangered) would be protected by a special stipulation that would be attached to all mineral leases on BLM-administered land in the Coos Bay District.

SEIS Special Attention Species would be protected by a special stipulation which would be attached to all mineral leases on BLM-administered land in the Coos Bay District.

The following notices and special leasing stipulations would be applied to the BLM-administered lands within the planning area in addition to those described above:

- No Surface Occupancy stipulations to protect great blue heron rookeries.
- Timing stipulations to protect raptor nests and osprey nest sites.
- Controlled surface use stipulations to protect Late-Successional and Riparian Reserves, key watersheds and Connectivity/Diversity Blocks, special recreation management areas, and managed rural interface areas.

Each stipulation also includes waivers, exceptions, and modifications defined as follows:

Waiver - The lifting of a stipulation from a lease which constitutes a permanent revocation of the stipulation from that time forward. This is usually a substantial change and requires a 30-day posting of the action for public involvement before the permitting activity associated with the process can be approved.

Exception - This is a one time lifting of the stipulation to allow a permitting activity for a specific proposal. It has no permanent effect on the lease stipulation and would not constitute a substantial change to the stipulation and requires no posting.

Modification - This is a change to a stipulation which either temporarily suspends the stipulation requirement or permanently lifts the application of the stipulation on a given portion of the lease. It may or may not require posting based on whether or not the change is determined to be substantial by the Authorized Officer.

Leasing Notices and Stipulations

1. Standard Leasing Stipulations

a. Standard stipulations for oil and gas, which are listed in Section 6 of "Offer to Lease and Lease for Oil and Gas" (Form No. 3100-11), are as follows:

Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air and water; to cultural, biological, visual and other resources; and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses shall be conditioned so as to prevent unnecessary or unreasonable interference with rights of lessee.

Prior to disturbing the surface of the leased lands, lessee shall contact BLM to be apprised of procedures to be followed and modifications or reclamation measures that may be necessary. Areas to be disturbed may require inventories or special studies to determine the extent of impacts to other resources. Lessee may be required to complete inventories or short-term special studies under guidelines provided by lessor. If in the conduct of operations, threatened or endangered species, objects of historic or scientific interest, or substantial unanticipated environmental effects are observed, lessee shall immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects until appropriate steps have been taken to protect the site or recover the resources as determined by BLM in consultation with other appropriate agencies.

b. Standard stipulations for geothermal leasing, found in Section 6 of "Offer to Lease and Lease for Geothermal Resources" (Form 3200-24), are very similar to those described above for oil and gas leasing.

2. Powersite Stipulation (Form No. 3730-1) is to be utilized on all lands within powersite reservations.

3. Stipulation for Lands Under Jurisdiction of Department of the Army, Corps of Engineers (Form No. 3109-2) are as follows:

All areas within 2,000 feet of any major structure—including but not limited to dams, spillways, or embankments—are restricted areas. The lessee, his operators, agents, or employees shall not disturb the surface or subsurface estates of the restricted areas. If the Commander or the authorized representative discovers an imminent danger to safety or security that allows no time to consult the BLM, that person may order such activities stopped immediately. The Authorized Officer of the BLM shall review the order and determine the need for further remedial action. Platform drilling over water areas (flood pool/drawdown zone) is prohibited; the method of drilling shall be directional from an off site base. This restriction is required because occupancy would negatively affect or interfere with authorized project purposes and/or operational needs as listed below:

Fish and Wildlife Habitat - Power Production
Flood Control - Recreation
Irrigation - Water Quality
Navigation - Water Supply
Other Legislative Authorities

Land surface occupancy may be permitted within the lease area; however, directional drilling from an off-site base may be required. The Secretary of the Army or designee reserves the right to require cessation of operations if a national emergency arises. Upon request of approval from higher authority, the Commander will give the lessee written notice, or if time permits, request the BLM to give notice of the required cessation.

4. Lease Notices

The following Notices are to be issued with each lease for all lands administered by BLM within the planning area. Lease notices are attached to leases in the same manner as stipulations; however, there is an important distinction between lease notices and stipulations. Lease notices do not involve new restrictions or requirements. Any requirements contained in a lease notice must be fully supported in either laws, regulations, policy, or onshore oil and gas orders.

Notice - Wildlife

Notice

Wildlife - Threatened or Endangered Species Nest Sites and Nesting Habitat

The leased lands are in an area suitable for the habitat of the (scientific name), (common name) animal species which is listed as a threatened or endangered species, or is a candidate species proposed for listing.

All viable habitat will be identified for the lessee/operator by the Authorized Officer of the BLM during the preliminary environmental review of the proposed surface use plan. If the field examination indicates that the proposed activity may affect the species, then consultation will be conducted with the U.S. Fish & Wildlife Service pursuant to Sec. 7 of the Endangered Species Act of 1973, as amended. The consultation will determine whether or not the proposed activity would jeopardize the continued existence of the species, and, if so, the extent, if any, the proposed activity will be allowed.

Authority: The Endangered Species Act of 1973.

Table 3-32 lists the threatened and endangered animal species known or suspected to occur in the Coos Bay District.

Notice - Plants

Notice

Resource: Special Status Plant Species

The leased lands are in an area suitable for the habitat of the (scientific name), (common name) plant species listed below which is considered as federal candidate species.

All viable habitat will be identified for the lessee/operator by the Authorized Officer of the BLM during the preliminary environmental review of the proposed surface use plan. If the field examination indicated that the proposed activity may affect the species, then BLM policy directs that technical assistance be obtained from the U.S. Fish & Wildlife Service to ensure that actions will not increase the need to list the species as threatened or endangered species.

Authority: The Endangered Species Act of 1973.

Table 3-31 lists the threatened and endangered plant species known or suspected to occur in the Coos Bay District.

Notice - Cultural Resources

Notice

Cultural Resources: An inventory of the leased lands would be required prior to surface disturbance to determine if cultural resources are present and to identify needed mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator shall:

1. Contact the Surface Management Agency (SMA) to determine if a cultural resource inventory is required. If an inventory is required, then:
2. The lessee or operator will complete the required inventory; or at their option, may engage the services of a cultural resource consultant acceptable to the SMA to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the standard 10-acre minimum to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted.
3. Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited. The lessee or operator shall immediately bring to the attention of the SMA any cultural resources discovered as a result of approved operations under this lease, and shall not disturb such discoveries until directed to proceed by the SMA.

Authorities: Compliance with Section 106 of the National Historic Preservation Act is required for all actions that may affect cultural properties eligible to the National Register of Historic Places. Section 6 of the Oil and Gas Lease Terms (Form 3100-11) requires that operations be conducted in a manner that minimizes adverse impacts to cultural and other resources.

5. Leasing Stipulations

The following special stipulations are to be utilized on specifically designated tracts of land as described under the PRMP.

NSO - Land Use

No Surface Occupancy

Resource: Land Use Authorizations

Stipulation: Surface occupancy and use is prohibited on Recreation and Public Purposes (R&PP) or FLPMA leases.

Objective: To protect uses on existing R&PP and FLPMA leases.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The area affected by this stipulation may be modified by the Authorized Officer if the land use authorization boundaries are modified.

Waiver: This stipulation may be waived by the Authorized Officer if all land use authorizations within the leasehold have been terminated, canceled, or relinquished.

NSO - Recreation

No Surface Occupancy

Resource: Recreation

Stipulation: Surface occupancy and use is prohibited within the (developed or potential site name) recreation sites/areas.

Objective: To protect developed and potential recreation sites and areas.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified by the Authorized Officer if the recreation site/area boundaries are changed.

Waiver: This stipulation may be waived if the Authorized Officer determines that the entire leasehold no longer contains developed or potential recreation sites/areas.

NSO - Special Areas

No Surface Occupancy

Resource: Special Areas

Stipulation: Surface occupancy and use is prohibited within the (Areas of Critical Environmental Concern (ACECs), Research Natural Areas (RNAs), or Environmental Education Areas (EEAs)).

Objective: To protect important historic, cultural, scenic values, natural resources, natural systems or processes, threatened and endangered plant and animal species, and/or natural hazard areas of the ACEC, RNA or EEA.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified by the Authorized Officer if the ACEC, RNA or EEA boundaries are changed.

Waiver: This stipulation may be waived if the Authorized Officer determines that the entire leasehold no longer contains designated ACECs, RNAs or EEAs.

NSO - Research

No Surface Occupancy

Resource: Regional Forest Nutritional Research Study Installations

Stipulation: Surface occupancy and use is prohibited within regional forest nutritional research study installations.

Objective: To protect regional forest nutritional research study installations.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified by the Authorized Officer if the regional forest nutritional research study installation boundaries are changed.

Waiver: This stipulation may be waived if the Authorized Officer determines that the entire leasehold no longer contains regional forest nutritional research study installations.

NSO - Progeny Sites and Seed Orchards

No Surface Occupancy

Resource: Progeny plantation sites and seed orchards.

Stipulation: Surface occupancy and use is prohibited within progeny plantation sites or seed orchards.

Objective: To protect progeny plantation sites and seed orchards.

Exception: None.

Modification: The boundaries of the stipulated area may be modified by the Authorized Officer if the progeny plantation site or seed orchard boundaries are changed.

Waiver: This stipulation may be waived if the Authorized Officer determines that the entire leasehold no longer contains progeny plantation sites or seed orchards.

NSO - VRM (Class I)

No Surface Occupancy

Resource: Visual Resource Management (VRM) Class I

Stipulation: Surface occupancy and use is prohibited in VRM Class I areas.

Objective: To preserve the existing character of the landscape.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified by the Authorized Officer if the boundaries of the VRM Class I area are changed.

Waiver: This stipulation may be waived by the Authorized Officer if all VRM Class I areas within the leasehold are reduced to a lower VRM class. Areas reduced to a lower VRM class will be subject to the Controlled Surface Use stipulation for visual resources.

NSO - Wildlife (Threatened/Endangered Bird Species)

No Surface Occupancy

Resource: Wildlife - Bald Eagle, Peregrine Falcon, Northern Spotted Owl, Snowy Plover, Marbled Murrelet, and Aleutian Canada Goose nest sites and nesting habitat and important feeding and concentration habitat.

Stipulation: Surface occupancy and use is prohibited within (0.5-mile (Distance yards/miles) of known nest sites which have been active within the past seven years and within nesting habitat in riparian areas and within the designated boundaries of habitat.

Objective: To protect nesting sites and/or nesting habitat and critical habitat in accordance with the Endangered Species Act (ESA).

Exception: An exception may be granted by the Authorized Officer if the operator submits a plan which demonstrates that the proposed action will not affect species or its habitat. If the Authorized Officer determines that the action may or will have an adverse effect on the species, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM in consultation or conferencing with the U.S. Fish and Wildlife Service (USFWS).

Modification: The boundaries of the stipulated area may be modified if the Authorized Officer, in consultation with USFWS, determines that portion of the area can be occupied without adversely affecting nest sites or nesting and critical habitat.

Waiver: This stipulation may be waived if the Authorized Officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting nest sites or nesting habitat and other critical habitat, or if the species is declared recovered and is no longer protected under the ESA.

NSO - Wildlife (Great Blue Heron and Osprey)

No Surface Occupancy

Resource: Wildlife - Great Blue Heron rookery and Osprey nests and nest habitat.

Stipulation: Surface occupancy and use is prohibited within 250 yards of known great blue heron rookeries and within 0.5 mile of osprey nest sites that have been active within the past seven years.

Objective: To protect great blue heron rookeries and osprey nest sites.

Exception: An exception may be granted by the Authorized Officer if the operator submits a plan which demonstrates that the proposed action will not affect the above species or its habitat. If the Authorized Officer determines that the action may or will have an adverse effect on the species, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM.

Modification: The boundaries of the stipulated area may be modified if the Authorized Officer determines that portion of the area can be occupied without adversely affecting the above species or its habitat.

Waiver: This stipulation may be waived if the Authorized Officer determines that the entire leasehold can be occupied without adversely affecting great blue heron or osprey nest sites.

NSO - Riparian Reserves and Key Watersheds

No Surface Occupancy

Resource: Riparian Reserves and Key Watersheds.

Stipulation: Unless otherwise authorized, drill site construction and access through Riparian Reserves and key watersheds within this leasehold will be limited to established roadways.

Objective: To protect riparian vegetation and reduce erosion adjacent to water courses.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan which demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The area affected by this stipulation may be modified by the Authorized Officer if it is determined that portions of the area do not include Riparian Reserves and key watersheds, floodplains, or water bodies.

Waiver: This stipulation may be waived by the Authorized Officer if it is determined that the entire leasehold does not include Riparian Reserves and key watersheds.

CSU - Soils

Controlled Surface Use

Resource: Soils

Stipulation: Prior to disturbance of slopes over 60 percent, an engineering/reclamation plan must be approved by the Authorized Officer. Such plan must demonstrate how the following will be accomplished:

- Site productivity will be restored.
- Surface runoff will be adequately controlled.
- Off-site areas will be protected from accelerated erosion, such as rilling, gullying, piping, and mass wasting.
- Water quality and quantity will be in conformance with state and federal water quality laws.
- Surface-disturbing activities will not be conducted during extended wet periods.
- Construction will not be allowed when soils are frozen.
- Additional state requirements would be incorporated into the engineering/reclamation plan.

Objective: To maintain soil productivity; provide necessary protection to prevent excessive soil erosion on steep slopes; and avoid areas subject to slope failure, mass wasting, piping, or having excessive reclamation problems.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan which demonstrates that the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The area affected by this stipulation may be modified by the Authorized Officer if it is determined that portions of the area do not include slopes over 60 percent.

Waiver: This stipulation may be waived by the Authorized Officer if it is determined that the entire leasehold does not include slopes over 60 percent.

CSU - VRM (Class II)

Controlled Surface Use

Resource: Visual Resource Management (VRM) Class II.

Stipulation: All surface-disturbing activities, semipermanent, and permanent facilities in VRM Class II areas may require special design including location, painting, and camouflage to blend with the natural surroundings and to meet the visual quality objectives for the area.

Objective: To control the visual impacts of activities and facilities within acceptable levels.

Exception: None.

Modification: None.

Waiver: This stipulation may be waived if the Authorized Officer determines that there are no VRM Class II areas in the leasehold.

CSU - Special Status Species

Controlled Surface Use

Resource: Special Status Plant or Animal Species

Stipulation: Unless otherwise authorized, drill site construction and access through habitat of (scientific name), (common name), a (federal candidate, state listed or bureau sensitive) species, within the leasehold will be limited to designated roadways.

Objective: To protect special status species.

Exception: An exception may be granted by the Authorized Officer if the operator submits a plan which demonstrates that the proposed action will not affect the species or its habitat. If the Authorized Officer determines that the action may or will have an adverse effect on the species, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan may be reviewed for technical accuracy with the U.S. Fish and Wildlife Service (USFWS).

Modification: The boundaries of the stipulated area may be modified if the Authorized Officer, based on discussions with USFWS, determines that portion of the area can be occupied without adversely affecting nest sites or habitat.

Waiver: This stipulation may be waived if the Authorized Officer, in discussing with USFWS, determines that the entire leasehold can be occupied without adversely affecting nest sites or nesting habitat and other habitat, or if the species is no longer considered to be a special status species.

Note: Special status plant species occurring on the district are listed in Table 3-31, and special status animal species are listed in Table 3-32.

CSU - SRMA and Recreation Rivers

Controlled Surface Use

Resource: Special Recreation Management Area (SRMA) and sitable and eligible (but not assessed) recreation rivers.

Stipulation: Unless otherwise authorized, drill site construction and access through special recreation management areas within this leasehold will be limited to established roadways.

Objective: To protect recreational qualities of the lands involved and recreational facilities, as well as enhance recreational opportunities within the designated boundary of the SRMA.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan which demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The area affected by this stipulation may be modified by the Authorized Officer if it is determined that portions of the area do not include Special Recreation Management Areas.

Waiver: This stipulation may be waived by the Authorized Officer if it is determined that the entire leasehold does not include Special Recreational Management Areas.

CSU - LSRs and Connectivity/Diversity Blocks

Controlled Surface Use

Resource: Late-Successional Reserves and Connectivity/Diversity Blocks

Stipulation: Unless otherwise authorized, drill site construction and access through Late-Successional Reserves or Connectivity/Diversity Blocks within this leasehold will be limited to established roadways.

Objective: To protect vegetation and to retain and/or restore old-growth forest.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan which demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The area affected by this stipulation may be modified by the Authorized Officer if it is determined that portions of the area do not include Late-Successional Reserves or Connectivity/Diversity Blocks.

Waiver: This stipulation may be waived by the Authorized Officer if it is determined that the entire leasehold does not include Late-Successional Reserves or Connectivity/Diversity Blocks.

CSU - RIAs

Controlled Surface Use

Resource: Managed Rural Interface Areas

Stipulation: Unless otherwise authorized, drill site construction and access through managed rural interface areas in (legal description) within the leasehold will be limited to designated roadways.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan which demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The area affected by this stipulation may be modified by the Authorized Officer if it is determined that portions of the area do not include managed rural interface areas.

Waiver: This stipulation may be waived by the Authorized Officer if it is determined that the entire leasehold does is not included in managed rural interface areas.

Timing - Wildlife

Timing Limitation

Resource: Wildlife - Raptor Nests

Stipulation: Surface use is prohibited from (date), within (distance in yards/miles) of raptor nest sites which have been active within the past two years. This stipulation does not apply to the operation and maintenance of production facilities.

Objective: To protect nest sites of raptors which have been identified as species of special concern in Oregon.

Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan which demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the Authorized Officer determines that portions of the area no longer are within (distance in yards/miles) of raptor nests which have been active within the past two years. The dates for the timing restriction may be modified if new information indicates that (dates specified above) are not valid for the leasehold.

Waiver: This stipulation may be waived if the Authorized Officer determines that the entire leasehold no longer is within (distance in yards/miles) of raptor nest sites which have been active within the past two years.

Locatable Minerals

General

The following operational guidelines for mining activities have been compiled to facilitate in complying with the 43 CFR 3809 surface management regulations, which apply to all mining operations on BLM-administered lands in the Coos Bay District. All of the following guidelines may not apply to every mining operation. It is the mining claimant's and\or operator's responsibility to avoid "unnecessary or undue degradation" and to promptly perform all necessary reclamation work. Refer to regulations of 43 CFR 3809 for general requirements. For guidance on the reclamation of mining and exploration sites that will be followed on the Coos Bay District, refer to BLM's *Solid Mineral Reclamation Handbook* (H-3042-1).

An intergovernmental agreement between BLM and the Oregon Department of Geology and Mineral Industries was designed to avoid duplication of regulations, inspections, and approval of reclamation plans as well as minimize repetitive costs to mining operators. This agreement can be reviewed at the District Office.

The following guidelines include some, but not all, of the requirements of the various state agencies overseeing mining operations. BLM does not enforce State requirements; they are included here as information. State requirements could change during the life of the plan.

Prospecting, Exploration and Mining

State of Oregon Requirements

Out-of-stream mining—which disposes of all waste water by evaporation and/or seepage, with no readily-traceable discharge to ground water or surface water—that involves processing of up to 10,000 cubic yards of material per year must be authorized under General Permit #0600 issued by the Department of Environmental Quality (DEQ). Instream use of suction dredges must be authorized by Permit #0700-J issued by the DEQ.

Removal or alteration of over 50 cubic yards of material in any waters of the state requires a Removal-Fill permit from the Division of State Lands. This permit is required for any relocation of flowing streams in conjunction with mining.

Any person engaging in onshore mineral exploration that disturbs more than one surface acre or involves drilling to greater than 50 feet must obtain an exploration permit from the Oregon Department of Geology and Mineral Industries (DOGAMI). Mining operations involving 5,000 or more cubic yards of material per year or disturbing one or more acres of land will require an operating permit from DOGAMI.

BLM Requirements

Operations ordinarily resulting in only negligible disturbance as defined in 43 CFR 3809.0-5(b) are considered to be "casual use" and no notification to or approval by the BLM is required. All operators proposing occupancy, timber removal, use of mechanized earth moving equipment, operation of suction dredges having intake hoses with an inside diameter greater than four inches, or surface disturbance of five acres or less during any calendar year must provide a written notice to the district office at least 15 days prior to the commencement of any surface disturbance. For operations that will cause greater than five acres of cumulative surface disturbance, the operator is required to submit a plan of operations pursuant to the regulations in 43 CFR 3809.1-4. BLM requirements for protection of specific resource values or specific activities are listed below individually.

Cultural and Paleontological Resources

Operators shall not knowingly alter, injure, or destroy any scientifically important paleontological (fossil) remains or any historical or archaeological site, structure, or object on federal lands. The operator shall immediately bring to the attention of the Authorized Officer, any paleontological (fossil) remains or any historical or archaeological site, structure, or object that might be altered or destroyed by exploration or mining operations, and shall leave such discovery intact until instructed to proceed by the Authorized Officer. The Authorized Officer shall evaluate the discovery, take action to protect or remove the resource, and allow operations to proceed.

Threatened and Endangered Plant/Animal Species

Operators shall take such action as may be needed, as stipulated in guidelines developed through consultation with the U.S. Fish and Wildlife Service, to prevent adverse impacts to threatened or endangered species of plants and animals and their habitat that may be affected by operations. Under Notice-level operations, if the review of the notice by BLM reveals that a potential conflict with a threatened or endangered species exists, the operator will be advised not to proceed and informed that a knowing violation of the taking provision of the Endangered Species Act will result in a notice of noncompliance and may result in criminal penalties. If the operator wishes to develop measures that will eliminate the conflict, then the Authorized Officer will arrange for the participation of BLM resource specialists and the U.S. Fish and Wildlife Service in reviewing the proposed revision to the Notice. If processing a proposed Plan of Operations indicates that a potential conflict exists with a threatened or endangered species or its habitat, the Authorized Officer shall notify the operator that the plan cannot be approved until BLM has complied with Section 7 of the Endangered Species Act. Special status species plants and animals (see Chapter 3, Special Status Species section) and their habitat will be identified by the Authorized Officer and shall be avoided wherever possible.

The Chapter 3 Special Status Species section provides a listing of special status species known or suspected to occur on the district.

Vegetation/Timber Removal

The operator may remove and/or use only vegetation that interferes with mining activities. An application must be submitted to the Authorized Officer pursuant to 43 CFR 3821.4 describing the proposed use of merchantable timber from O&C or CBWR lands for mining purposes. No trees over six inches diameter at breast height (dbh) may be cut until the application is approved and the trees are marked. The Coos Bay BLM office recommends that small trees (e.g., less than six inches dbh) and shrubs be lopped and scattered, or shredded for use as mulch. Trees over six inches dbh are to be bucked and stacked in an accessible location, unless they are needed for the mining operation. Trees removed from the claim may not be used as payment for conversion of raw logs into dimension lumber or mine timbers.

Firewood

Merchantable conifer timber may not be used for firewood. Firewood permits may be issued to the operator for use in conjunction with the mining operation, but no wood may be used until a permit is obtained from BLM. Permits will be limited to hardwoods or salvage timber that is not considered to be merchantable. Firewood authorized for use in conjunction with a mining operation is not to be removed from the mining claim.

Topsoil

Topsoil and usable subsoil (usually the top 12 to 18 inches) should be carefully removed from all areas in advance of excavations or establishment of mine waste dumps and tailings dams. This material should be stockpiled and protected from erosion for use in future reclamation.

Roads

Existing roads and trails should be used where possible. Temporary roads are to be constructed to a minimum width and with minimum cuts and fills. All roads shall be constructed in a manner that avoids negatively impacting slope stability. Roads will be promptly reclaimed when no longer needed unless permission is specifically granted by the BLM to do otherwise.

Wetlands

When proposed mining activities are expected to fill or alter wetland areas, the operator must contact the Department of the Army, Corps of Engineers, for the appropriate permit. A copy of the permit must be submitted to the Authorized Officer in conjunction with a Notice or Plan of Operations.

Water Quality

All operators shall comply with federal and state water quality standards including the Federal Water Pollution Control Act. When mining activity is in or near bodies of water, or sediment and/or other pollutants are discharged, the State DEQ should be consulted. A discharge permit, and possibly a settling pond, will be required when mining operations have any discharge. It is the operator's responsibility to obtain any needed suction dredging, stream bed alteration, or water discharge permits required by the state DEQ or other state agencies. Copies of such permits shall be provided to the BLM's Authorized Officer when a Notice or Plan of Operations is filed. All operations, including casual use, shall be conducted in a manner that does not involve unnecessary or undue degradation of surface and subsurface water resources and that complies with all pertinent Federal and state water quality laws.

Claim Monuments

State law prohibits use of plastic pipe for claim staking in Oregon. It is BLM policy that existing plastic pipe monuments have all openings (ends and slots) permanently closed. Upon loss or abandonment of the claim, all plastic pipe must be removed from the public lands. Old markers replaced during normal claim maintenance are to be replaced with either wood posts or stone and/or earth mounds, constructed in accordance with state law.

Drill Sites

Wherever possible, exploratory drill sites should be located next to or on existing roads without blocking public access. When drill sites must be constructed, the size of the disturbance shall be as small as possible. Any operator engaging in mineral exploration that involves drilling to greater than 50 feet must obtain an exploration permit from the DOGAMI (ORS 517.962).

Dust and Erosion Control

Any exposed ground surfaces susceptible to erosion will need to be protected during operation and also during periods of shut-down. This can be accomplished with seeding, mulching, installation of water diversions, and routine watering of dust-producing surfaces.

Fire Safety

All state fire regulations must be followed, including obtaining a campfire permit or blasting permit, if needed. All internal gas combustion engines must be equipped with approved spark arresters and exhaust systems.

Safety and Public Access

Under Public Law 167, the government has the right to dispose and manage surface resources (including timber) on mining claims located after July 23, 1955. These rights are limited to the extent that they do not endanger or materially interfere with any phase of an ongoing mining operation or uses reasonably incident thereto. Claims located prior to July 23, 1955 may have surface rights, if such claims were verified as being valid under Sections 5 and 6 of the Act.

The general public may not be excluded from the mining claim. Mining claimants shall not exclude the public from mining claims with force, intimidation, or posting of "no trespassing" signs. It is the operator's responsibility to protect the public from mining hazards. The general public can be restricted only from specific dangerous areas (e.g., underground mines, open pits or equipment storage sites) by erecting fences, gates and warning signs. Gates or road blocks may be installed on existing or proposed roads only with BLM approval. Gates restricting public access onto a mine site will only be considered in such cases where the safety hazard is specifically created by the mining activity and the hazard covers a large area. The determination as to whether a safety hazard is large enough to warrant a gate will be determined on a case-by-case basis. Fences (rather than gates) or other approved barriers shall be utilized to protect the public from hazards related to small excavations, tunnels and shafts.

Some roads which cross private land to reach BLM-administered lands are controlled by the private parties. While some of these roads have been assigned BLM road numbers, access may only be granted for administrative use by the BLM and its licensees and permittees under a nonexclusive easement. Mining claimants are not considered licensees or permittees and must make their own arrangements with the private party to use such roads.

Sewage

Self-contained or chemical toilets are to be used at exploration or mining operations and their contents disposed at approved dump stations. Outhouses and uncontained pit toilets are considered unnecessary and undue degradation and are not allowed on mining claims. County sanitation permits are required for all other types of sanitation facilities.

Structures

A Notice or Plan of Operation is required when any structure is installed on a mining claim. A Notice or Plan of Operation is required when occupancy of more than 14 days occurs. The claimant must maintain the claim and operations, structures, equipment, and other facilities in a safe and orderly manner. It is district policy that permanent structures will not be allowed for exploration or prospecting operations. Permanent structures are those fixed to the ground by any of the various types of foundations, slabs, piers, poles, or other means allowed by state or county building codes. The term shall also include structures placed on the ground that lack foundations, slabs, piers or poles, and that can only be moved through disassembly into component parts or by techniques commonly used in house moving. Permanent structures include trailers, mobile homes, motor homes, vans, campers, cars, and similar structures when fixed to the ground by any method for more than 14 days. Any temporary structures placed on public lands in conjunction with prospecting or exploration are allowed only for the duration of such activities, unless expressly allowed in writing by the Authorized Officer to remain on the public lands. Temporary structures are defined as structures not fixed to the ground by a foundation and that can be moved without disassembly into their component parts.

Permanent structures may be allowed for mining operations if they are deemed reasonably incident to conducting the operation. Mining operations are defined as all functions, work, facilities, and activities in connection with development, mining, or processing mineral deposits.

All permanent or temporary structures placed on public lands shall conform to appropriate state or local building, fire, and electrical codes, and occupational safety and health and mine safety standards. BLM may require that operators remove any structures or facilities that have not been used for an extended period of time and reclaim the site.

Equipment

The claimant must maintain the claim and operations, structures, equipment, and other facilities in a safe and orderly manner. Only equipment and supplies that are appropriate, reasonable, and in regular use for explorations and mining operations will be allowed on the claim. Equipment used only infrequently should be stored off-site. That which can be readily removed in a small truck and/or trailer at the end of a work day should not be left onsite. Storage of unused or infrequently used equipment will not normally serve to justify the occupancy of a claim. Accumulation of unused and/or derelict equipment and other unused materials, including trash, may be in violation of federal and state ordinances regarding offensive littering, and will be considered undue and unnecessary degradation of the public lands. BLM may require the operator to remove equipment after an extended period of non-operation and to reclaim the site. In such cases, the claimant will be required to take immediate mitigative action.

Animals

Pursuant to Public Law 167, use of a mining claim is expressly limited to prospecting, mining, or processing operations and uses reasonably incident thereto. Any maintenance of domestic animals on the claim must be reasonably incident to these expressed uses. Such animals must be managed in accordance with applicable federal, state and local ordinances such as not to cause undue or unnecessary degradation of the public lands. Unless otherwise permitted consistent with regulations at 43 CFR 4100 and controlled pursuant to 43 CFR 8360, agriculture animals are not considered necessary to conduct mining operations. If dogs or cats are to be present at the work site, the operator is required to keep them under control at all times so they do not chase wildlife, or threaten people.

Tailings Ponds

Settling ponds must be used to contain sediment, and any discharge must meet standards of the Oregon DEQ.

Solid and Hazardous Waste

Trash, garbage, used oil, or other waste must be removed from public land and properly disposed. Trash, garbage or hazardous wastes must not be buried on public lands. Accumulations of trash, debris, or inoperable equipment on public lands are viewed as unnecessary degradation and will not be tolerated. Pursuant to 43 CFR 8365 and state regulations at part 164.785 and 164.805, operators conducting illegal disposals shall be held financially responsible for the clean-up of such disposals.

Occupancy at Mining Sites

Occupying public land in excess of 14 days per calendar year must be reasonably incident to and required for actual continuous mining or diligent exploration operations and will require either a Notice or Plan of Operations. In general, operations at the casual use level are not sufficient to warrant occupancy on a mining claim.

The following discussion of occupancy only applies to those operators wishing to assert their right to live full-time on public lands pursuant to privileges granted under the mining laws. It does not apply to operators proposing to camp at prospecting or mining sites on weekends or one to two days during the week.

- Only those persons working diligently and continuously on a mining or exploration operation will be allowed to live on the claim beyond the 14-day per calendar year camping limit. A continuous mining or exploration operation is defined as an operation necessitating full-time work at the operating site. The Oregon State Bureau of Labor and Industries generally considers that full-time work consists of a minimum of 40 hours worked per week.
- Each person proposing to live full-time at the site would be expected to conduct full-time work each week. Normal working hours are to be specified on the Notice or Plan of Operation at the time of submittal to the district BLM office. Should work hours be altered periodically or seasonally, it is the responsibility of the operator to notify the BLM (prior to the change) so that the Notice or Plan can be modified. Camping sites used in conjunction with mineral exploration or extraction operations are expected to be kept in a neat and orderly condition. If operations cannot be pursued due to high fire danger in forested areas, then living at the claim site will not be permitted.

Security Guard

In some cases, it may be reasonably incident for a security guard to live onsite to protect valuable property and equipment and/or safeguard the public from workings which are necessary for the mining operation. The need for a security guard shall be such that the person with those duties is required to be present at the site whenever the operation is shut down temporarily or at the end of the workday, or whenever the mining claimant, operator, or workers are not present on the site. The proposed occupancy by a security guard must be described as a Notice or Plan of Operations.

BLM Reclamation Requirements

Reclamation of all disturbed areas must be performed concurrently or as soon as possible after exploration or mining ceases and shall conform to guidelines described in BLM Handbook H-3042-1. Reclamation shall include, but not be limited to:

- Saving topsoil for final application after reshaping disturbed areas.
- Taking measures to control erosion, landslides, and water runoff.
- Taking measures to isolate, remove, or control toxic materials.
- Reshaping the area disturbed, applying topsoil, and revegetating disturbed areas where reasonably practicable.
- Rehabilitating fisheries and wildlife habitat.

When reclamation of the disturbed area has been completed, except to the extent necessary to preserve evidence of mineralization, the BLM must be notified so that an inspection of the area can be made.

The following general guidelines will be used in developing site-specific stipulations for reclamation of exploration and mining activities.

Non-Operation

All mining equipment, vehicles, and structures must be removed from the public lands during periods of non-operation in excess of 24 consecutive months and/or at the conclusion of mining, unless authorization from BLM is given to the operator or claimant in writing. Accumulations of debris and trash on mining claims are considered unnecessary and undue degradation and must be removed immediately regardless of the status of the operation. Failure to do so will result in the issuance of a notice of noncompliance.

Backfilling and Recontouring

The first steps in reclaiming a disturbed site are backfilling excavations and reducing high walls, if feasible. Coarse rock material should be replaced first, followed by medium-sized material, with fine materials to be placed on top. Recontouring means shaping the disturbed area to blend with the surrounding lands, minimize the possibility of erosion, and facilitate revegetation.

Seedbed Preparation

Recontouring should include preparation of an adequate seedbed. This is accomplished by ripping or discing compacted soils to a depth of at least 6 inches in rocky areas and at least 18 inches in less rocky areas. This should be done following the contour of the land to limit erosion. All stockpiled settling pond fines, and then topsoil, shall be spread evenly over the disturbed areas.

Fertilizer

Due to the generally poor nutrient value of mined soils, it may be necessary to use fertilizer to ensure maximum yield from the seeding mixture. For example, a fertilizer with analysis of 16-16-16 (or other approved mix) should be spread at the rate of 200 lbs/acre, but not allowed to enter streams or bodies of water.

Seeding

BLM-approved seeding prescription must be used to provide adequate revegetation for erosion control and restoration of wildlife habitat, and to achieve productive secondary uses of public lands. Seeding should be done in September or October in the Coos Bay District to ensure that seed is in the ground prior to the first significant winter rains. If seeding fails, or is done at the wrong time, the operator may be asked to reseed the area at the appropriate time, as determined by the Authorized Officer.

Broadcast seeding is preferable on smaller sites. When using a whirlybird type seed spreader, it is important to keep the different seeds well mixed to achieve even distribution. For the best results, a drag harrow should be pulled over the seeded area to cover the seed before mulching. The Authorized Officer may recommend hydroseeding on critical sites for rapid coverage and erosion control on cut banks, fill slopes, and any other disturbed areas.

Tree Replacement

Replacement of destroyed trees may be necessary with the planting of seedlings or container stock.

Mulch

As directed by the BLM, during review of the Notice or Plan of Operations, the disturbed area may require mulching during interim or final reclamation procedures. Depending on site conditions, the mulch may need to be punched, netted, or blown on with a tackifier to hold it in place. In some cases, erosion control blankets may be cost effective for use.

Roads

After mining is completed, all new roads shall be reclaimed, unless otherwise specified by the BLM. High walls and cut banks are to be knocked down or backfilled to blend with the surrounding landscape. Remove all culverts from drainage crossings and cut back the fill to the original channel. The roadbed should be ripped to a minimum depth of 18 inches to reduce compaction and provide a good seedbed. The road must then be fertilized, seeded, and mulched if necessary. When necessary, water bars are to be used to block access and provide drainage.

Tailings Ponds

The ponds should be allowed to dry out, then the sediments removed and spread with the topsoil, unless the sediments contain toxic materials. If the ponds contain toxic materials, a plan will be developed to identify, dispose, and mitigate effects of the toxic materials. If necessary, a monitoring plan will also be implemented. The ponds should then be backfilled and reclaimed.

Visual Resources

To the extent practicable, the reclaimed landscape should have characteristics that approximate or are compatible with the visual quality of the adjacent area.

Suction Dredging

Specific requirements have been identified by the BLM and the state for suction dredging activities.

State of Oregon Requirements for Suction Dredging

All suction dredge operations must be authorized by Permit #0700-J issued by the Department of Environmental Quality. This permit is issued free of charge for dredges having hoses with an inside diameter of four inches or less. Registration and a filing fee of $50.00 is required for suction dredges having hoses with an inside diameter greater than four inches. Mining operators should contact the Department of Environmental Quality, Water Quality Division, 811 S.W. Sixth Avenue, Portland, Oregon, 97204, (503) 229-5696, for further information.

Suction dredging outside the "permitted work period" established for certain waterways by the Oregon Department of Fish and Wildlife (ODFW) will require written permission by an ODFW biologist.

The river beds of navigable waterways are controlled by the Oregon Division of State Lands.

BLM Requirements for Suction Dredging

Filing either a Notice or Plan of Operations is required on all suction dredge operations where the dredge has an intake hose equal to or greater than 4 inches in diameter regardless of nozzle size, or where any suction dredge operator proposes occupancy on BLM land (in excess of 14 calendar days per year) or the installation of structures of any kind.

Further, a Notice or Plan of Operation is required when more than one suction dredge is in operation at the same time on one mining claim regardless of intake hose size.

A Notice or Plan of Operation is not required for casual use activities, which include but are not limited to the following:

- Use of a suction dredge having an intake hose equal to or less than 4 inches in diameter and where no structures or occupancy beyond 14 calendar days per year is involved.
- Staking a mining claim.
- Prospecting, sampling, gold panning, or mining using only hand tools.

At the existing Sixes River Recreation Site—which is withdrawn from mining claim location—the use of hand tools (including shovels, gold pans, and sluice boxes) and suction dredges with a suction hose of four inches (state threshold for permit fee) or less is allowed with no permits or Notice or Plan of Operation required by the BLM Coos Bay District Office. Recreational miners are required to comply with DEQ requirements as described below. Larger suction dredges with intake hoses having a diameter greater than four inches are not allowed at this recreation site. Additional information on recreational mining at this site is available at the Coos Bay BLM office.

Salable Minerals

Proposed Operations

All proposed pits and quarries, and any exploration that involves surface disturbance, are required to have operating and reclamation plans approved by the Area Manager. All proposals will undergo the appropriate levels of review and compliance with the National Environmental Policy Act.

Operating Procedures

The following requirements should be made a part of every contract or permit providing for the use of mineral material sites on the district:

- Oversized boulders shall not be wasted but shall be broken and utilized concurrently with the excavated material.
- The operator shall comply with local and state safety codes covering quarry operations, warning signs, and traffic control. All necessary permits must be obtained from state and county agencies.

- Use of the site for equipment storage and stockpiling rock material is allowed for the duration of the contract or permit. Use of the site beyond that time would be authorized under a special use permit.

Quarry Design

Due to steep terrain in the operating area, most quarry developments will require a series of benches to effectively maximize the amount of mineral materials to be removed in a safe manner. In most cases, bench height should not exceed 40 feet, and if the bench will be used by bulldozers to access other parts of the quarry, the width of the bench should be at least 25 feet. If the bench is not used by equipment, then this width can be reduced to approximately 10 feet.

Clearing of timber and brush should be planned at least 10 feet beyond the edge of the excavation limit. Most often the brush will be piled and burned at the site or scattered nearby.

If at all possible, all topsoil and overburden should be stockpiled and saved for eventual quarry site reclamation. These piles may need to be stabilized by mulching or seeding to minimize erosion during the winter months.

As a standard procedure, the excavation of the quarry floor should be designed with an outslope of approximately two percent to provide for adequate drainage of the floor. Compliance with this design should be made a requirement of all operators at the site.

Appendix N. Zone III - Lands

The following is a list of BLM-administered lands in the planning area identified through the planning process as being available for use in exchanges for private inholdings in Zones 1 or 2. These lands also may be available for disposal through sale under FLPMA Section 203(a) if no important recreation, wildlife, watershed, special status species habitat, and/or cultural values are identified during disposal clearance reviews, and no viable exchange proposals can be identified.

Township	Range	Section	Subdivision	Status	Acres[1]
19S	12W	01	Lots 1, 2	PD	40.48
21S	11W	31	Lot 11	PD	40.00
		32	Lots 16, 23	PD	59.01
22S	8W	15	Lot 9, 10	O&C	25.30
		21	Lots 7, 14	O&C	2.42
		24	Lot 7	PD	3.00
25S	11W	30	Lot 5	PD	39.92
25S	13W	06	Por. Lot 4		
		07	Pors. of NE1/4, SE1/4NW1/4, SW1/4SW1/4, E1/2SW1/4, Lots 2, 3, 4 (utilized as an effluent lagoon)	PD	374.00
		07	Lots 5, 6, 7, 8 (zoned future industrial)	PD	109.73
		18	Lot 7, E1/2E1/2NW1/4 (zoned future industrial)	PD	56.15
26S	08W	10	SE1/4NE1/4	PD	40.00
26S	11W	08	NW1/4NE1/4	PD	40.00
26S	12W	09	Por. SE1/4SW1/4	Acq.	4.00
26S	14W	28	NW1/4NE1/4	PD	40.00
27S	11W	05	Por. S1/2NE1/4SE1/4NW1/4, SE1/4NW1/4SE1/4NW1/4	CBWR	1.32
27S	12W	13	Por. SE1/4NW1/4SE1/4	CBWR	0.86
27S	14W	29	Lot 3	PD	2.28
28S	12W	19	SE1/4SE1/4	CBWR	40.00
30S	12W	05	Lot 6	O&C	1.80
30S	12W	06	Lots 3,4	PD	1.14
30S	13W	21	N1/2NE1/4NW1/4	PD	20.00

Township	Range	Section	Subdivision	Status	Acres[1]
32S	15W	04	NE1/4SE1/4NE1/4, S1/2NE1/4NE1/4, W1/2SE1/4NE1/4, Lots 1, 2, 3, 4	PD	71.75
39S	12W	08	W1/2NW1/4	PD	80.00

[1] Acreage based on MTP.

Note: Not all listed lands are shown on Map 1-2 due to the small size of some lands.

Appendix O. Land Ownership Adjustment Criteria

In accordance with FLPMA and other laws, Executive Orders, and Departmental and Bureau policy, the evaluation process for any land disposal or acquisition will provide for consideration of unique resource values or other factors, including but not limited to those listed below:

- Access to public lands or access for public purposes.
- Threatened, Endangered, or sensitive plant and animal species habitat.
- Riparian areas, flood plains, and wetlands.
- Fish habitat.
- Nesting/breeding habitat for important game and non-game animals.
- Seasonal habitat of big game.
- Developed recreation sites and recreation use areas.
- Unique sites or habitats with fish, wildlife, botanical, cultural, or recreational interpretive values.
- High quality scenery.
- Energy and mineral potential.
- Land adjacent to rivers suitable for designation under the National Wild and Scenic Rivers Act.
- Significant cultural resources and sites eligible for inclusion on the National Register of Historic Places.
- Designated wilderness areas and areas being studied for possible wilderness designation.
- Accessibility of the land for recreation and other public uses.
- Amount of public investments in facilities or improvements and the potential for recovering those investments.
- Difficulty or cost of administration (manageability).
- To develop a more manageable land base for timber management (e.g., provide for logical harvest units, balance age class distributions).
- Significance of the decision in stabilizing business, social and economic conditions, and/or lifestyles.
- Whether private sites exist for the proposed use.
- Encumbrances, including but not limited to withdrawals and existing leases or permits.
- Consistency with cooperative agreements, and plans or policies of other agencies.
- Suitability (need for change in land ownership or use) for purposes including but not limited to community expansion or economic development, such as industrial, residential, or agricultural (other than grazing) development.

Appendix P. Land Withdrawals and Recommendations to Maintain or Revoke

Authority [1]	Location			Acreage [2]	Purpose	Segregative Effect [3]	Surface Management Agency	Recommend to Maintain or Revoke and Rationale	Planned/Future Management
	T.	R.	Sec.						
PLO 3869 (OR 016183)	20S	9W	31	81.29	Smith River Falls Recreation Site	B	BLM	Maintain-Developed Site	Recreation Site
	20S	9W	33	3.50	Vincent Creek Recreation Site	B	BLM	Maintain-Developed Site	Recreation Site
	23S	10W	2	78.86	Loon Lake Recreation Site	B	BLM	Maintain-Developed Site	Recreation Site
	27S	10W	4	60.00	Park Creek Recreation Site	B	BLM	Maintain-Developed Site	Recreation Site
	27S	10W	18	20.00	Big Tree Recreation Site	B	BLM	Maintain-Developed Site	Recreation Site
	30S	9W	9	80.00	Bear Creek Recreation Site	B	BLM	Maintain-Developed Site	Recreation Site
	32S	14W	12	120.00	Sixes River Recreation Site	B	BLM	Maintain-Developed Site	Recreation Site
SO 12-31-1930 Rec. Wdl. No. 43	23S	10W	1	51.51	East Shore Recreation Site	C	BLM	Maintain-Developed Site	Recreation Site
PLO 3530 (OR 016183)	27S	10W	17 18 19 20	590.00	Cherry Creek Natural Area	B	BLM	Maintain-Protecting site, providing for research opportunities.	Research Natural Area
Public Law 181 5-5-1926 (OR 21318)	27S	11W	5	120.00	Laverne County Park	B	BLM/Coos County	Maintain-Developed County Park.	
	27S	12W	35	160.00	Rock Prairie County Park	B	BLM/Coos County	Maintain-Potential for County Park development.	
	28S	9W	7	87.72	Judge Hamilton County Park	B	BLM/Coos County	Maintain-Potential for County Park development.	
	28S	11W	5	80.00	Middle Creek County Park	B	BLM/Coos County	Maintain-Potential for County Park development.	
	28S	11W	11	80.00	Frona County Park County	B	BLM/Coos County	Maintain-Developed Park.	

Authority [1]	Location T.	R.	Sec.	Acreage [2]	Purpose	Segregative Effect [3]	Surface Management Agency	Recommend to Maintain or Revoke and Rationale	Planned/Future Management
SO 6-12-1907 (OR 21318)	40S	13W	11 14	320.75	Potential National Park	C	BLM	Revoke-Not developed, no planned development, no public support for establishment of park or monument.	Manage for multiple use.
EO 11-24-1903 (OR 19231)	22S	13W	14	85.00	Umpqua Jetty maintenance	B	COE	Maintain-Serving original purpose.	
EO 8-23-1895 (OR 21901)	22S	13W	13	15.30	Umpqua River Light Station	B	USCG	Maintain-Serving original purpose.	
EO 7-14-1884 (OR 19277)	26S	14W	2 3	41.41	Military Facility	B	US Navy	Maintain those acres functioning as a military facility. Revoke remaining acres that may be in excess of military needs. Indicated need for community economic development.	Recreational development or community economic development opportunity.
EO 6-14-1876 (OR 22094)	26S	14W	4	14.20	Arago Administrative Facility	B	USCG	Revoke-Indicated need for community economic development.	Recreational development or community economic development opportunity.
EO 9-11-1843 (OR 36343)	26S	14W	4	5.00	Arago Lighthouse	B	USCG	Revoke-USCG indicated a desire to relinquish operations of lighthouse.	Recreational development or community economic development opportunity.
EO 7-14-1884 (OR 4011)	26S	14W	22	.43	Bar Watch	B	USCG	Maintain-Serving original purpose.	
EO 7-14-1884 (OR 4011)	26S	14W	23	.67	Administrative site	B	USCG	Maintain-Serving original purpose.	
EO 11-13-1889 (OR 19228)	25S 25S	13W 14W	18 13	153.77 160.00	Coos Bay Jetty Project	B	COE	Revoke-Withdraw was established as a dredge spoil disposal area. Presently dredge spoils disposal is occurring in off-shore areas.	Recreational development as a portion of Coos Bay Shorelands SRMA.
PLO 5490 (OR 012693)	All Public Domain lands on district			50,329.0	Multiple use management	D	BLM	Maintain-Serving original purpose.	

Authority[1]	Location T.	R.	Sec.	Acreage[2]	Purpose	Segregative Effect[3]	Surface Management Agency	Recommend to Maintain or Revoke and Rationale	Planned/Future Management
PLO 6287, E0 5-6-1935, PLO 4395	Unsurveyed Islands and rocks				Oregon National Wildlife Refuge	B	USF&WL	Maintain-Serving original purpose.	
PLO 6973 4-23-1993 (OR 46538)	25S	13W	4	80.00	North Spit Recreation Area	B	BLM	Maintain-Serving original purpose. Extend for a 20-year period.	Recreational development as a portion of the Coos Bay Shoreland SRMA.
			5	32.23					
			6	307.66					
			7	511.93					
			8	4.61					
			18	249.99					
	25S	14W	12	14.85					
			13	232.00					
			23	1.10					
			24	398.89					
			25	30.42					
			26	113.21					
				1,976.89 (sub-total)					
PLO 6967 4-29-1993 (OR 45401)	30S	15W	2	94.20	New River ACEC	B	BLM	Maintain-Serving original purpose.	Protection of unique resources.
			3	75.58					
			10	209.00					
			11	80.15					
			15	156.83					
			21	22.36					
			22	109.83					
			28	105.45					
			32	2.18					
			33	27.40					
				882.98 (sub-total)					
PSC 01	28S	10W	6	45.26	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
			8	40.00					
			12	40.00					
			14	40.00					
				165.26 (sub-total)					
PSC 147	27S	10W	31	115.35	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
	27S	11W	35	236.72					
	28S	10W	5	124.12					
			6	45.14					
			14	240.00					
				761.33 (sub-total)					

Authority [1]	Location			Acreage [2]	Purpose	Segregative Effect [3]	Surface Management Agency	Recommend to Maintain or Revoke and Rationale	Planned/Future Management
	T.	R.	Sec.						
PSC 162	22S	8W	7	181.60	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
			9	11.07					
			17	46.78					
			21	2.42					
	22S	9W	7	56.44					
			9	50.04					
	23S	8W	13	80.00					
				428.35 (sub-total)					
PSC 198	22S	9W	7	183.93	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
PSR 273	20S	9W	26	85.27	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
			28	44.31					
			32	75.85					
			34	39.79					
				245.22 (sub-total)					
PSR 629, WPD 11	20S	8W	17	39.65	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
			19	623.68					
			21	304.23					
			27	120.00					
			33	499.01					
	20S	9W	21	40.00					
			25	449.37					
			27	284.81					
			31	232.49					
			33	278.38					
			35	173.27					
	21S	8W	1	400.00					
			11	200.00					
				3,644.89 (sub-total)					
PSR 630	22S	8W	24	3.00	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.

Authority [1]	Location T.	R.	Sec.	Acreage [2]	Purpose	Segregative Effect [3]	Surface Management Agency	Recommend to Maintain or Revoke and Rationale	Planned/Future Management
PSR 633, WPD 11	22S	7W	19	29.93	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
	22S	8W	5	19.75					
	22S	9W	7	21.32					
			13	149.00					
			17	72.20					
	23S	7W	7	49.10					
			19	151.06					
			21	30.15					
	23S	8W	11	29.38					
				551.89 (sub-total)					
PSR 634, WPD 11	22S	10W	35	239.95	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
	23S	9W	7	41.66					
			17	120.00					
			19	158.55					
	23S	10W	1	171.51					
			13	40.00					
				771.67 (sub-total)					
PSR 645, WPD 12	23S	10W	35	40.00	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
PSR 659	30S	9W	9	40.00	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
PSR 659, WPD 14	26S	9W	17	160.00	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
			19	160.00					
			29	160.00					
			31	360.00					
	27S	9W	7	265.55					
	27S	11W	15	182.80					
	30S	9W	17	80.00					
	30S	10W	3	120.00					
			13	160.00					
				1,648.35 sub-total)					

Authority [1]	Location T.	R.	Sec.	Acreage [2]	Purpose	Segregative Effect [3]	Surface Management Agency	Recommend to Maintain or Revoke and Rationale	Planned/Future Management
PSR 662	26S	9W	10	360.00	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
			14	160.00					
	32S	13W	17	400.00					
	32S	14W	11	40.00					
			12	160.00					
				1,120.00 (sub-total)					
WPD 14	30S	9W	9	40.00	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
WPD 17	27S	11W	5	610.66	Protect water power and reservoir development potential.	C	BLM/FERC	Revoke, unless there is substantial evidence that the site is viable for the production of hydropower.	Multiple use management of restored lands.
			7	40.00					
			17	40.00					
			19	163.04					
			21	440.00					
			29	480.00					
			31	280.14					
			33	240.00					
	27S	12W	11	186.14					
			13	520.00					
			23	200.00					
			25	320.00					
			27	240.00					
			35	220.00					
	28S	9W	7	335.20					
	28S	10W	3	366.60					
			5	329.68					
			9	280.00					
			11	240.00					
			15	80.00					
	28S	11W	1	152.80					
			3	234.00					
			7	32.28					
	28S	12W	1	254.80					
			13	155.68					
			23	161.76					
				6,602.78 (sub-total)					

Acreage Summary	Acreage[2]	Segregative Effect[3]
BLM Administrative Sites	4,265.78	B
County Administrative Site	527.72	B
Public Domain-Multiple Use	50,329.00	D
Other Agency	480.78	A or B
Water - Power Sites	16,166.67	C

[1] Authority Abbreviations:

EO - Executive Order	PSR - Power Site Reserve
PLO - Public Land Order	SO - Secretarial Order
PSC - Power Site Classification	WPD - Water Power Designation

[2] Does not include lands transferred out of federal ownership subsequent to withdrawal. Acreage based on the Master Title Plat.

[3] Segregative Effect:
A - Withdrawn from operation of the general land laws, the mining laws, and the mineral leasing laws.
B - Withdrawn from operation of the general land laws and the mining laws.
C - Withdrawn from operation of the general land laws only.
D - Withdrawn from operation of the general land laws, but not from the Recreation and Public Purposes Act, sales or exchanges.

Abbreviations Used:
COE = Corp of Engineers
USCG = US Coast Guard
USF&W = US Fish and Wildlife Service
FERC = Federal Energy and Regulation Commission
(OR XXX) = Oregon Case File Number

February 1994

Appendix Q. Land Use Classifications, Withdrawals, and Right-of-Way Agreements

Summary of Major Changes

- The appendix title has been changed from Lands and Transportation.
- This appendix was Appendix III-A in the draft RMP.
- Table III-A-2 from the draft RMP has been deleted since the Coos Bay Shorelands Withdrawal (described in Table 2-3) has been approved.
- Table III-A-3 from the draft RMP has been deleted since the New River Withdrawal (described in Table 2-3) has been approved.
- Tables III-A-4, III-A-5, III-A-6, and III-A-7 from the draft RMP have been updated and renumbered as Q-2, Q-3, Q-4 and Q-5, respectively.
- Table Q-6 is a new table reflecting the proposed acquisition of the Cape Blanco Lighthouse Facilities from the Coast Guard.

Table Q-1. Existing Land Use Classifications

Type of Classification	Location	Acreage[1]	Purpose	Segregative Effect
R&PP (OR 38907)	T.28S., R.11W. Sec. 5: Lots 9-12, 14	18.27	Coos County Rehabilitation Farm	Withdrawn from appropriation under general land laws and mining laws.
R&PP (OR 016152)	T.27S., R.11W., Sec. 5: Pors. S1/2NW1/4,N1/2SW1/4 Lot 1, SE1/4NE1/4	129.4	County Park Laverne	Withdrawn from appropriation under general land laws and mining laws.
R&PP (OR 7761)	T31S., R.12W Sec. 13: Por. Lot 18	0.66	School playground, Powers	Withdrawn from appropriation under general land laws and mining laws.
R&PP (OR 46140)	T.26S., R.14W. Sec. 3: Por. SE1/4NE1/4	0.37	Charleston RFPD Fire Hall Community Bldg.	Withdrawn from appropriation under general land laws and mining laws.

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[1] Acreage derived from Master Title Plat

Table Q-2. Proposed Dean Creek Withdrawal

Federal Lands

T.21S., R.11W.,
  Sec. 31, Por. Lot 4
  Sec. 32, Por. Lots 5, 6, 7, 8
  Sec. 33, Por. Lot 7, Lot 8, Por. S1/2SW1/4, Por. SW1/4SE1/4, SE1/4SE1/4
  Sec. 34, Lots 5 and 6

T.22S., R.11W.,
  Sec. 3, Por. Lot 14, Lot 15
  Sec. 4, Por. SE1/4NE1/4, W1/2NE1/4, NE1/4NE1/4, NW1/4
  Sec. 5, Lots 1, 2, Por. NW1/4, W1/2NE1/4
  Sec. 6, Lots 1, 2, 3, Por. NE1/4

The areas described aggregate approximately 1,041 acres in Douglas County, Oregon.[1]

Private Lands

T.21S., R11W.,
  Sec. 32, Por. Lot 8
  Sec. 33, Lots 5 and 6, Por. Lot 7, Por. S1/2SW1/4, Por.SW1/4SE1/4

The area described aggregates approximately 56 acres in Douglas County, Oregon.[1]

The Dean Creek Elk Viewing Area Habitat Management Plan (HMP), approved on December 19, 1986, does not address the need for a protective withdrawal. Since formulation of the HMP, BLM has invested thousands of dollars in developing the Dean Creek Elk Viewing Area (1041 acres) and will continue to develop the site further as well as acquire additional lands to expand the area. These investments, combined with the management prescriptions for the Dean Creek Elk Viewing Area, necessitate the need for a protective withdrawal to preclude other potential uses which would destroy the integrity of the elk viewing area. Withdrawal of the lands from the operation of the mining laws and public land laws is the only way to eliminate all other nonconforming uses of the lands within the Dean Creek Elk Viewing Area.

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[1] Acreage derived from the Master Title Plat.

Table Q-3. Proposed Withdrawal Relinquishment

U.S. Corps of Engineers, Coos Bay Jetty Project

T.25 S., R.13 W.,
Sec. 18 - W1/2NW1/4, NW1/4SW1/4, Lot 8

T.25 S., R.14 W.,
Sec. 13 - E1/2SE1/4, Lots 1 and 2

The area described contains 313.84 acres.[1]

The withdrawal established by EO 11/13/1889, OR 19228 held by the U.S. Army, Corps of Engineers, (Coos Bay Jetty Project) was partially revoked in 1984. With the development of the Coos Bay Shorelands Special Recreation Management Area, BLM recognized a need for administrative jurisdiction over all federal lands on the Coos Bay North Spit to facilitate the area's management. The Corps of Engineers has agreed to consider relinquishment of the remaining 313.84 acres of the withdrawal and incorporation of the lands into the existing right-of-way reservation OR#36509.

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[1] This acreage is derived from the Master Title Plat.

Table Q-4. Proposed Administrative Withdrawals

Site Name	Legal Description	Acres
Wassen Seed Orchard	T.21 S., R.9 W., Sec. 10 SE1/4NW1/4	26
Johns Peak Test Site	T.23 S., R.9 W., Sec. 27 NE1/4SW1/4	24
Burnt Ridge	T.26 S., R.9 W., Sec. 33 N1/2NW1/4	12
Elk Run	T.26 S., R.10 W., Sec. 8 SE1/4SW1/4	5
Elk Run	T.26 S., R.10 W., Sec. 17 NE1/4NW1/4	9
Big Basin	T.26 S., R.12 W., Sec. 15 SE1/4SE1/4	1
Lookout Ridge	T.26 S., R.12 W., Sec. 35 SE1/4NE1/4, N1/2SE1/4	15
Middle Fork Brummit Creek	T.27 S., R.9 W., Sec. 19 SE1/4SE1/4	2
Joe Colombo	T.27 S., R.9 W., Sec. 29 SE1/4NE1/4, NE1/4SE1/4	10
Middle Fork Brummit Creek	T.27 S., R.9 W., Sec. 30 NE1/4NE1/4	2
Brewster Rock	T.27 S., R.10 W., Sec. 29 SE1/4NE1/4	9
China Wall	T.27 S., R.10 W., Sec. 31 NE1/4SE1/4	2
China Wall	T.27 S., R.10 W., Sec. 32 NW1/4NW1/4	4
Cultus	T.27 S., R.11 W., Sec. 22 SW1/2SW1/4	10
Cherry Creek	T.27 S., R.11 W., Sec. 23 S1/2NW1/4	8
Cultus	T.27 S., R.11 W., Sec. 27 NW1/4NW1/4	4
Camas Creek	T.28 S., R.11 W., Sec. 36 NW1/4NE1/4	13
Elk Creek	T.28 S., R.11 W., Sec. 36 N1/2N1/2	13
Weekly Creek	T.28 S., R.12 W., Sec. 36 E1/2SE1/4	11
Sandy Single	T.29 S., R.10 W., Sec. 2 S1/2SE1/4	11
Slater Creek	T.30 S., R.9 W., Sec. 17 SW1/4NW1/4	11
Russell - Eckley	T.30 S., R.12 W., Sec. 29 S1/2SE1/4	3
White Mountain	T.31 S., R.14 W., Sec. 17 NW1/4NW1/4	12
Lobster Hill	T.35 S., R.13 W., Sec. 20 center of section	13
Northern Prairie	T.39 S., R.13 W., Sec. 13 NE1/4NE1/4	11
Black Mound	T.40 S., R.13 W., Sec. 20 NE1/4NW1/4	13
Shot Gun Quarry	T.26 S., R.9 W., Sec. 17 SW1/4SE1/4	2
Tioga Creek Quarry	T.26 S., R.9 W., Sec. 31 NW1/4SE1/4	3
Moon Creek Quarry	T.26 S., R.11 W., Sec. 35 SW1/4NW1/4	4
Buck Peak Quarry	T.27 S., R.9 W., Sec. 10 NW1/4NW1/4	2
Elk Wallow Quarry	T.27 S., R.9 W., Sec. 14 SE1/4SE1/4	21
Burnt Mountain Quarry	T.27 S., R.9 W., Sec. 24 SW1/4SE1/4	5
Laverne Stockpile	T.27 S., R.11 W., Sec. 5 NW1/4SE1/4	2
Sandy Quarry	T.28 S., R.10 W., Sec. 27 SE1/4SE1/4	11

The acreages listed above are derived from GIS. The sites listed above include progeny test sites, seed production areas, or rock quarries that are proposed for administrative withdrawal. The BLM has invested thousands of dollars in development and maintenance of the sites, necessitating the need for protective withdrawals to preclude other potential uses. Withdrawal of the lands from the operation of the mining and public land laws would eliminate all other nonconforming uses.

Table Q-4. Proposed Administrative Withdrawals (continued)

Site Name	Legal Description	Acres
Wassen Creek ACEC	T. 21 S., R. 9 W., Pors. of Secs. 7, 8, 17, and 18; T. 21 S., R 10 W., Pors. of Secs. 12 and 13	3,440
North Fork Coquille River ACEC	T. 26 S., R. 10 W., Pors. of Secs. 9, 16, and 21	290
China Wall ACEC	T. 27 S., R. 10 W. Por. of Sec. 29	240
Tioga Creek ACEC	T. 27 S., R. 9 W., Por. of Sec. 17	40
Upper Rock Creek ACEC	T. 29 S., R. 9 W., Por. of Sec. 5	460
North Fork Hunter Creek ACEC	T. 37 S., R. 14 W., Pors. of Secs. 1, 2, 11, 12, 13, and 14	1,730
Hunter Creek Bog ACEC	T. 37 S., R. 14 W., Pors. of Secs. 13 and 24	570
North Fork Chetco River ACEC	T. 40 S., R. 13 W., Pors. of Secs. 4, 5, 8, and 9	600
Burnt Mountain Cabin Recreation Site	T. 27 S., R. 10 W., Por. of Sec. 13	38
Palmer Butte Recreation Site	T. 40 S., R. 13 W., Por. of Sec. 13	40
Big Bend Recreation Site (Potential)	T. 21 S., R. 8 W., Por. of Sec. 10	200
Smith River Log Dump Recreation Site (Potential)	T. 20 S., R. 10 W., Por. of Sec. 36, T. 20 S., R. 11 W., Por. of Sec. 31	5
Fawn Creek Boat Ramp (Potential)	T. 20 S., R. 9 W., Por. of Sec. 31	5
McKinley Camp Recreation Site (Potential)	T. 27 S., R. 11 W., Por. of Sec. 21	10
Tioga Basin Recreation Site (Potential)	T. 26 S., R. 9 W., Por. of Sec. 35	30

Table Q-4. Proposed Administrative Withdrawals (continued)

Site Name	Legal Description	Acres
East Fairview Boat Ramp (Potential)	T. 27 S., R. 12 W., Por. of Sec. 13	6

On the above list are existing and potential recreation sites or areas and proposed special management areas. Withdrawal of the lands from the mining and public land laws would eliminate all other nonconforming uses and protect the values that resulted in selection of the site/area for special management.

Site Name	Legal Description	Acres
Pacific Ocean Coastline	T. 19 S., R. 12 W., Sec. 1 Lots 1-2	40.48
	T. 26 S., R. 14 W., Sec.28 NW1/4NE1/4	40.00
	T. 27 S., R. 14 W., Sec.29 Lot 3	2.28
	T. 30 S., R. 15 W., Sec.12 SW1/4SW1/4	40.00
	T. 32 S., R. 15 W., Sec. 4 Lots 1-4, S1/2NE1/4NE1/4, N1/2SE1/4NE1/4, SW1/4SE1/4NE1/4	71.75
	T. 33 S., R. 14 W., Sec. 31 Lot 2, 6-7, NE1/4SE1/4	151.56
	T. 34 S., R. 15 W., Sec. 1 Lot 1	7.92
	T. 34 S., R. 14 W., Sec. 6 Lot 1	40.70
	Sec. 33 Lots 1-3, 7	162.05
	Sec. 34 NW1/4NW1/4	40.00
	T. 37 S., R. 14 W., Sec. 7 NE1/4NW1/4	40.00
	T. 38 S., R. 14 W., Sec. 4 SE1/4SW1/4	40.00
	Sec. 5 SW1/4NE1/4	40.00
	Sec. 34 SE1/4NW1/4	40.00
	T. 39 S., R. 14 W., Sec. 23 NW1/4NW1/4	40.00
	T. 41 S., R. 13 W., Sec. 6 Lot 9	1.44
	Sec. 7 lot 2	1.44

The proposed Pacific Ocean Coastline Withdrawal covers approximately 800 acres located within six miles of the Pacific Shoreline. In addition to recreational, botanical, and visual resources values, these parcels contain numerous existing and potential archaeological and historical values which warrant protection from the nondiscretionary mining laws.

Table Q-5. Existing Right-of-Way Agreements

Permit & Agreement No.	Permittee
C-48	Georgia-Pacific Corporation
C-68	Champion International Corporation
C-76	Smith and Bice
C-85	Coos Bay Timber Company
C-89	International Paper Company
C-103	Myrtle Point Veneer
C-270	Weyerhaeuser Company
C-286	Georgia-Pacific Corporation
C-287	Georgia-Pacific Corporation
C-330	Georgia-Pacific Corporation
C-333	Bohemia Incorporated
C-339	International Paper Company
C-344	Georgia-Pacific Corporation
C-354	Georgia-Pacific Corporation
C-358	Thelma and Severt Iverson
C-364	Moore Mill and Lumber Company
C-390	Cherry Creek Mill Company
C-395	Coos Head Timber Company
C-403	South Coast Lumber Company
C-418	Al Pierce Lumber Company
C-421	Roseburg Resources
C-423	Glade Gould
C-435	Carl Thomas
C-437	Ray Shepard
C-440	International Paper Company
C-441	Cherry Creek Mill Company
C-456	Weyerhaeuser Company
C-459	International Paper Company
C-468	International Paper Company
C-497	Wooley Enterprises, Incorporated
C-509	Menasha Corporation
C-586	International Paper Company
C-599	Menasha Corporation
C-625	Lone Rock Timber Company
C-636	International Paper Company
C-647	Lone Rock Timber Company
C-681	Capital Veneer
C-706	South Coast Lumber Company

Table Q-6. Proposed Cape Blanco Lighthouse Withdrawal

Federal Lands

T.32S., R. 16W., Section 2 - Lot 1

The area described contains 47.30 acres.[1]

The BLM has been negotiating with the U.S. Coast Guard to acquire the above described lands which house the Cape Blanco Lighthouse facilities. If the acquisition is approved, the site could be used as a center for public benefit for the interpretation and preservation of maritime history and aboriginal prehistory. The site contains existing archaeological resources as well as the lighthouse. Upon acquisition it is likely that additional improvements would be added to the site. These features should be protected from potential loss which could occur from the non-discretionary land and mining laws by placing a withdrawal on the site.

[1] The acreage is derived from the Master Title Plat.

Appendix R. Monitoring Plan

Introduction

The monitoring plan for the RMP is tiered to the Monitoring and Evaluation Plan for the SEIS Record of Decision. Since the SEIS Monitoring and Evaluation Plan is not yet fully refined, the RMP Monitoring Plan is not complete. BLM has been, and will continue to be, a full participant in the development of the SEIS Monitoring and Evaluation Plan. Ongoing BLM effectiveness and validation monitoring will continue where relevant to Resource Management Plan direction (e.g., stocking surveys, threatened and endangered species studies, and water quality measurements).

The SEIS and RMP monitoring plans will not identify all the monitoring the Coos Bay District will do. Activity and project plans may identify monitoring needs of their own.

All Land Use Allocations

Expected Future Conditions and Outputs

- Protection of SEIS special attention species so as not to elevate their status to any higher level of concern.

Implementation Monitoring

Questions

1. Are surveys for the species listed in Appendix G conducted before ground-disturbing activities occur?
2. Are protection buffers being provided for specific rare and locally endemic species and other species in the upland forest matrix?
3. Are the sites of amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens, and arthropod species listed in Appendix G being protected?
4. Are the sites of amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens, and arthropod species listed in Appendix G being surveyed?
5. Are high priority sites for species management being identified?
6. Are general regional surveys being conducted to acquire additional information and to determine necessary levels of protection for arthropods and fungi species that were not classed as rare and endemic, bryophytes, and lichens?

Monitoring Requirements

1. At least 20 percent of all management actions will be examined prior to project initiation and re-examined following project completion, to determine if: surveys are conducted for species listed in Appendix G, protection buffers are provided for specific rare and locally endemic species and other species in the upland forest matrix, and sites of species listed in Appendix G are protected.
2. The Annual Program Summary will address Implementation Questions 4-6.

Effectiveness and Validation Monitoring

Questions

1. Are measures taken to protect the SEIS special attention species effective?

2. Is the forest ecosystem functioning as a productive and sustainable ecological unit?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Riparian Reserves

Expected Future Conditions and Outputs

- See Aquatic Conservation Strategy objectives.
- Provision of habitat for special status and SEIS special attention species.

Implementation Monitoring

Questions

1. Are watershed analyses being completed before on-the-ground actions are initiated in Riparian Reserves?

2. Is the width and integrity of the Riparian Reserves being maintained? (For example, did the conditions that existed before management activities change in ways that are not in accordance with the SEIS ROD Standards and Guidelines and RMP management direction?)

3. What silvicultural practices are being applied to control stocking, re-establish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives?

4. Are management activities in Riparian Reserves consistent with SEIS ROD Standards and Guidelines, RMP management direction, and Aquatic Conservation Strategy objectives?

5. Are new structures and improvements in Riparian Reserves constructed to minimize the diversion of natural hydrologic flow paths, reduce the amount of sediment delivery into the stream, protect fish and wildlife populations, and accommodate the 100-year flood?

6. A) Are all mining structures, support facilities, and roads located outside the Riparian Reserves?

   B) Are those located within the Riparian Reserves meeting the objectives of the Aquatic Conservation Strategy?

   C) Are all solid and sanitary waste facilities excluded from Riparian Reserves or located, monitored, and reclaimed in accordance with SEIS ROD Standards and Guidelines and RMP management direction?

7. Are new recreation facilities within the Riparian Reserves designed to meet, and where practicable, contribute to Aquatic Conservation Strategy objectives? Are mitigation measures initiated where existing recreation facilities are not meeting Aquatic Conservation Strategy objectives?

Monitoring Requirements

1. The files on each year's on-the-ground actions will be checked annually to ensure that watershed analyses were completed prior to project initiation and to ensure the concerns identified in the watershed analysis were addressed in the project's environmental assessment.

2. At least 20 percent of management activities within each resource area will be examined before project initiation and re-examined following project completion to determine whether the width and integrity of the Riparian Reserves were maintained.

3. The Annual Program Summary will report what silvicultural practices are being applied in order to attain Aquatic Conservation Strategy objectives.

4. At least 20 percent of the activities that are conducted or authorized within Riparian Reserves will be reviewed to identify whether the actions were consistent with the SEIS ROD Standards and Guidelines, RMP management direction, and Aquatic Conservation Strategy objectives. In addition to reporting the results of

this monitoring, the Annual Program Summary will also summarize the types of activities that were conducted or authorized within Riparian Reserves.

5. All new structures and improvements within a Riparian Reserve will be monitored during and after construction to ensure that it was constructed to: minimize the diversion of natural hydrologic flow paths, reduce the amount of sediment delivery into the stream, protect fish and wildlife populations, and accommodate the 100-year flood.

6. All approved mining Plans of Operations will be reviewed to determine if:

   A) Both a reclamation plan and bond were required.

   B) Structures, support facilities and roads were located outside of Riparian Reserves, or in compliance with Aquatic Conservation Strategy objectives if located inside the Riparian Reserve; and

   C) If solid and sanitary waste facilities were excluded from Riparian Reserves or located, monitored, and reclaimed in accordance with RMP management direction.

7. The Annual Program Summary will examine the status of evaluations of existing recreational facilities inside Riparian Reserves to ensure that Aquatic Conservation Strategy objectives are met. The Summary will also report on the status of the mitigation measures initiated where the Aquatic Conservation Strategy objectives cannot be met.

Effectiveness and Validation Monitoring

Questions

1. Is the health of Riparian Reserves improving?

2. Are management actions designed to rehabilitate Riparian Reserves effective?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Late-Successional Reserves

Expected Future Conditions and Outputs

- Development and maintenance of a functional, interacting, late-successional and old-growth forest ecosystem in Late-Successional Reserves.
- Protection and enhancement of habitat for late-successional and old-growth forest-related species including the northern spotted owl and marbled murrelet.

Implementation Monitoring

Questions

1. What is the status of the preparation of assessments and fire plans for Late-Successional Reserves?

2. What activities were conducted or authorized within Late-Successional Reserves and how were they compatible with the objectives of the Late-Successional Reserve plan? Were the activities consistent with SEIS ROD Standards and Guidelines, RMP management direction, and Regional Ecosystem Office review requirements and the Late-Successional Reserve assessment?

3. What is the status of development and implementation of plans to eliminate or control non-native species which adversely impact late-successional objectives?

Monitoring Requirements

1. The Annual Program Summary will address Implementation Questions 1-3.

Effectiveness and Validation Monitoring

Questions

1. Are forest management activities (e.g., special forest product harvesting) within Late-Successional Reserves compatible with the goal of developing and maintaining a functional, interacting, late-successional and old-growth forest ecosystem?

2. Does the harvest of special forest products have adverse effects on Late-Successional Reserve objectives?

3. Is a functional, interacting, late-successional ecosystem maintained where adequate and restored where inadequate?

4. Did silvicultural treatments benefit the creation and maintenance of late-successional conditions?

5. What is the relationship between levels of management intervention and the health and maintenance of late-successional and old-growth ecosystems?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Matrix

Expected Future Conditions and Outputs

- Production of a stable supply of timber and other forest commodities.
- Maintenance of important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags, and large trees.
- Assurance that forests in the Matrix provide for connectivity between Late-Successional Reserves.
- Provision of habitat for a variety of organisms associated with early and late-successional forests.

Implementation Monitoring

Questions

1. Are suitable numbers of snags, coarse woody debris, and green trees being left in a manner that meets the needs of species and provides for ecological function in harvested areas following timber harvest as called for in the SEIS ROD Standards and Guidelines and RMP management direction?
2. Are timber sales being designed to meet ecosystem goals for the Matrix?
3. Are late-successional stands being retained in fifth-field watersheds in which federal forest lands have 15 percent or less late-successional forest?

Monitoring Requirements

1. At least 20 percent of regeneration harvest timber sales in each resource area will be examined by pre- and post-harvest (and after site preparation) inventories to determine snag and green tree numbers, heights, diameters and distribution within harvest units. The measure of distribution of snags and green trees will be the percent in the upper, middle and lower thirds of the sale units monitored. Snags and green trees left following timber harvest activities (including site preparation for reforestation) will be compared to those that were marked prior to harvest.

   The same timber sales will also be inventoried pre- and post-harvest to determine if SEIS ROD and RMP down log retention direction has been followed.
2. At least 20 percent of the files on each year's timber sales will be reviewed annually to determine if ecosystem goals were addressed in the silvicultural prescriptions.
3. All proposed regeneration harvest timber sales in watersheds with less than 15 percent late-successional forest remaining will be reviewed prior to sale to ensure that a watershed analysis has been completed.

Effectiveness and Validation Monitoring

Questions

1. Are stands growing at a rate that will produce the predicted yields?
2. Are forests in the Matrix providing for connectivity between Late-Successional Reserves?

Monitoring Requirements

Deferred to the SEIS Monitoring Plan.

Air Quality

Expected Future Conditions and Outputs

- Attainment of National Ambient Air Quality Standards, and goals for the Prevention of Significant Deterioration and the Oregon Visibility Protection and Smoke Management Plan.

- Maintenance and enhancement of air quality and visibility in a manner consistent with the Clean Air Act and the State Implementation Plan.

Implementation Monitoring

Questions

1. Were efforts made to minimize the amount of particulate emissions from prescribed burns?

2. Are dust abatement measures used during construction activities and on roads during BLM timber harvest operations and other BLM commodity hauling activities?

3. Are conformity determinations being prepared prior to activities which may: contribute to a new violation of the National Ambient Air Quality Standards, increase the frequency or severity of an existing violation, or delay the timely attainment of a standard?

Monitoring Requirements

1. At least 20 percent of prescribed burn projects will be randomly selected for monitoring to assess what efforts were made to minimize particulate emissions, and to assess whether the environmental analysis that preceded the decision to burn addressed the questions set forth in the SEIS discussion of Emission Monitoring (pg. 3&4-100).

2. At least 20 percent of the construction activities and commodity hauling activities will be monitored to determine if dust abatement measures were implemented.

3. The Annual Program Summary will address Implementation Question 3.

Effectiveness and Validation Monitoring

Questions

1. What techniques were the most effective in minimizing the amount of particulate emissions from prescribed burns?

2. Are BLM prescribed burns contributing to intrusions into Class I areas or nonattainment areas?

3. Of the intrusions that the BLM is reported to be responsible for, what was the cause and what can be done to minimize future occurrences?

4. Are BLM prescribed underburns causing adverse air quality impacts to rural communities?

5. Are prescribed fires decreasing the actual or potential impacts from wildfire emissions?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Water and Soils

Expected Future Conditions and Outputs

- Restoration and maintenance of the ecological health of watersheds. See Aquatic Conservation Strategy objectives.
- Compliance with state water quality requirements to restore and maintain water quality to protect recognized beneficial uses.
- Improvement and/or maintenance of soil productivity.
- Reduction of existing road mileage within Key Watersheds.

Implementation Monitoring

Questions

1. Are site-specific Best Management Practices identified as applicable during interdisciplinary review carried forward into project design and execution?
2. What watershed analyses have been or are being performed? Are watershed analyses being performed prior to management activities in Key Watersheds?
3. What is the status of identification of instream flow needs for the maintenance of channel conditions, aquatic habitat, and riparian resources?
4. What watershed restoration projects are being developed and implemented?
5. What fuel treatment and fire suppression strategies have been developed to meet Aquatic Conservation Strategy objectives?
6. What is the status of development of road or transportation management plans to meet Aquatic Conservation Strategy objectives?
7. What is the status of preparation of criteria and standards which govern the operation, maintenance, and design for the construction and reconstruction of roads?
8. What is the status of the reconstruction of roads and associated drainage features identified in watershed analysis as posing a substantial risk? What is the status of closure or elimination of roads to further Aquatic Conservation Strategy objectives and to reduce the overall road mileage within Key Watersheds? If funding is insufficient to implement road mileage reductions, are construction and authorizations through discretionary permits denied to prevent a net increase in road mileage in Key Watersheds?
9. What is the status of reviews of ongoing research in Key Watersheds to ensure that significant risk to the watershed does not exist?
10. What is the status of evaluation of recreation, interpretive, and user-enhancement activities/facilities to determine their effects on the watershed? What is the status of eliminating or relocating these activities/facilities when found to be in conflict with Aquatic Conservation Strategy objectives?
11. What is the status of cooperation with other agencies in the development of watershed-based Research Management Plans and other cooperative agreements to meet Aquatic Conservation Strategy objectives? What is the status of cooperation with other agencies to identify and eliminate wild ungulate impacts which are inconsistent with attainment of Aquatic Conservation Strategy objectives?

Monitoring Requirements

1. At least 20 percent of the timber sales and silviculture projects stratified by management category will be randomly selected for monitoring to determine whether Best Management Practices (BMPs) were implemented as prescribed. The selection of management actions to be monitored will be based on beneficial uses likely to be impacted, and for which BMPs are being prescribed.

2. Compliance checks will be completed for all agreements entered into with providers of municipal water.

3. The Annual Program Summary will address Implementation Questions 3-11.

Effectiveness and Validation Monitoring

Questions

1. Is the ecosystem function of the watersheds improving?

2. Are State water quality criteria being met? When State water quality criteria is met, are the beneficial uses of riparian areas protected?

3. Are prescribed Best Management Practices maintaining or restoring water quality consistent with basin specific State water quality criteria for protection of specified beneficial uses?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Wildlife Habitat

Expected Future Conditions and Outputs

- Maintenance of biological diversity and ecosystem health to contribute to healthy wildlife populations.

Implementation Monitoring

Questions

1. Are suitable (diameter, length and numbers) of snags, coarse woody debris, and green trees being left in a manner that meets the needs of species and provides for ecological functions in harvested areas as called for in the SEIS ROD Standards and Guidelines and RMP management direction?

2. Are special habitats being identified and protected?

3. What is the status of designing and implementing wildlife habitat restoration projects?

4. What is the status of designing and constructing wildlife interpretive and other user-enhancement facilities?

Monitoring Requirements

1. At least 20 percent of regeneration harvest timber sales in each resource area will be examined by pre- and post-harvest (and after site preparation) inventories to determine snag and green tree numbers, heights, diameters and distribution within harvest units. The measure of distribution of snags and green trees will be the percent in the upper, middle and lower thirds of the sale units monitored. Snags and green trees left following timber harvest activities (including site preparation for reforestation) will be compared to those that were marked prior to harvest.

   The same timber sales will also be inventoried pre- and post-harvest to determine if SEIS ROD and RMP down log retention direction has been followed.

2. At least 20 percent of BLM actions within each resource area, on lands including or near special habitats, will be examined to determine whether special habitats were protected.

3. The Annual Program Summary will address Implementation Questions 4 and 5.

Effectiveness and Validation Monitoring

Questions

1. Are habitat conditions for late-successional forest associated species maintained where adequate and restored where inadequate?

2. Are the snags, green trees, and coarse woody debris being left achieving the habitat necessary to attain the desired population at a relevant landscape level?

3. Are BLM actions intended to protect special habitats actually protecting the habitat? Is the protection of special habitats helping to protect the species population?

4. What are the effects of management on species richness (numbers and diversity)?

Monitoring Requirements

Deferred to SEIS Monitoring Plan (which will address a variety of wildlife species such as amphibians, mollusks, and neotropical migratory birds).

Fish Habitat

Expected Future Conditions and Outputs

- See Aquatic Conservation Strategy Objectives.
- Maintenance or enhancement of the fisheries potential of streams and other waters, consistent with BLM's *Anadromous Fish Habitat Management on Public Lands* guidance, BLM's *Fish and Wildlife 2000 Plan*, the Bring Back the Natives initiative, and other nationwide initiatives.
- Rehabilitation and protection of at-risk fish stocks and their habitat.

Implementation Monitoring

Questions

1. Are at-risk fish species and stocks being identified?
2. Are fish habitat restoration and enhancement activities being designed and implemented which contribute to attainment of Aquatic Conservation Strategy Objectives?
3. Are potential adverse impacts to fish habitat and fish stocks being identified?

Monitoring Requirements

1. The Annual Program Summary will report on the status of watershed analysis to identify at-risk fish species and stocks, their habitat within individual watersheds, and restoration project needs.

2. The Annual Program Summary will report on the status of the design and implementation of fish habitat restoration and habitat activities.

3. The Annual Program Summary will report on the status of cooperation with federal, tribal, and state fish management agencies to identify and eliminate impacts associated with poaching, harvest, habitat manipulation, and fish stocking which threaten the continued existence and distribution of native fish stocks inhabiting federal lands. The Summary will also identify any management activities or fish interpretive and other user-enhancement facilities which have detrimental effects on native fish stocks.

4. At least 20 percent of the files on each year's timber sales and other relevant actions will be reviewed annually to evaluate documentation regarding fish species and habitat and related recommendations and decisions in light of policy and SEIS ROD Standards and Guidelines and RMP management direction. If mitigation was required, review will ascertain whether such mitigation was incorporated in the authorization document, and the actions will be reviewed on the ground after completion to ascertain whether the mitigation was carried out as planned.

Effectiveness and Validation Monitoring

Questions

1. Is the ecological health of the aquatic ecosystems recovering or sufficiently maintained to support stable and well-distributed populations of fish species and stocks?
2. Is fish habitat in terms of quantity and quality of rearing pools, coarse woody debris, water temperature, and width to depth ratio being maintained or improved as predicted?

3. Are desired habitat conditions for listed, sensitive, and at-risk fish stocks maintained where adequate and restored where inadequate?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Special Status and SEIS Special Attention Species Habitat

Expected Future Conditions and Outputs

- Protection, management, and conservation of federal listed and proposed species and their habitats to achieve their recovery in compliance with the Endangered Species Act (ESA) and Bureau special status species policies.

- Conservation of federal candidate and Bureau sensitive species and their habitats so as not to contribute to the need to list and recover the species.

- Conservation of state listed species and their habitats to assist the state in achieving management objectives.

- Maintenance or restoration of community structure, species composition, and ecological processes of special status plant and animal habitat.

- Protection of Bureau assessment species and SEIS special attention species so as not to elevate their status to any higher level of concern.

Implementation Monitoring

Questions

1. Are special status species being addressed in deciding whether or not to go forward with forest management and other actions? During forest management and other actions that may disturb special status species, are steps taken to adequately mitigate disturbances?

2. Are the actions identified in plans to recover species being implemented in a timely manner?

3. What coordination with other agencies has occurred in the management of special status species?

4. What land acquisitions occurred or are underway to facilitate the management and recovery of special status species?

5. What site-specific plans for the recovery of special status species were, or are being, developed?

6. What is the status of analysis which ascertains species requirements or enhances the recovery or survival of a species?

7. What is the status of efforts to maintain or restore the community structure, species composition, and ecological processes of special status plant and animal habitat?

Monitoring Requirements

1. At least 20 percent of the files on each year's timber sales and other relevant actions (e.g., rights-of-way and instream structures) will be reviewed annually to evaluate documentation regarding special status species and related recommendations and decisions in light of ESA requirements, policy, SEIS ROD Standards and Guidelines, and RMP management direction. If mitigation was required, review will ascertain whether such mitigation was incorporated in the authorization document, and the actions will be reviewed on the ground after their completion to ascertain whether the mitigation was carried out as planned.

2. Review implementation schedule and actions taken annually to ascertain if the actions to recover species were carried out as planned.

3. The Annual Program Summary will address Implementation Questions 3-7.

Effectiveness and Validation Monitoring

Questions

1. Are trends for special status species meeting the objectives of mitigation and/or conservation actions?
2. Have any federal candidates, Bureau assessment, or Bureau sensitive species been elevated to higher levels of concern due to BLM management?
3. Were desired habitat conditions for the northern spotted owl and marbled murrelet maintained where adequate and restored where inadequate?

Monitoring Requirements

Deferred to SEIS Monitoring Plan (which will address a variety of special status species including marbled murrelet, bald eagle, northern spotted owl, and anadromous fish species).

Special Areas

Expected Future Conditions and Outputs

- Maintenance, protection, and/or restoration of the relevant and important values of the special areas which include: Areas of Critical Environmental Concern (ACECs), Research Natural Areas (RNAs), and Environmental Education Areas (EEAs).

- Provision of recreation uses and environmental education in several ACECs. Management of uses to prevent damage to those values that make the area outstanding.

- Preservation, protection, or restoration of native species composition and ecological processes of biological communities in RNAs.

- Provision and maintenance of environmental education opportunities in EEAs. Management of uses to minimize disturbances of educational values.

- Retention of existing Research Natural Areas and existing Areas of Critical Environmental Concern that meet the test for continued designation. Retention of other special areas. Provision of new special areas where needed to maintain or protect important values.

Implementation Monitoring

Questions

1. Are BLM actions and BLM authorized actions/uses near or within special areas consistent with RMP objectives and management direction for special areas?

2. What is the status of the preparation, revision, and implementation of ACEC management plans?

3. What environmental education and research initiatives and programs are occurring in the RNAs and EEAs?

4. Are existing BLM actions and BLM authorized actions and uses not consistent with management direction for special areas being eliminated or relocated?

5. Are actions being identified which are needed to maintain or restore the important values of the special areas? Are the actions being implemented?

6. Are protection buffers being provided for specific rare and locally endemic species and other species in the upland forest matrix?

Monitoring Requirements

1. Annually, the files on all actions and research proposals within and adjacent to special areas will be reviewed to determine whether the possibility of impacts on ACEC values was considered, and whether any mitigation identified as important for maintenance of ACEC values was required. If mitigation was required, the relevant actions will be reviewed on the ground, after completion, to ascertain whether it was actually implemented.

2. The Annual Program Summary will address Implementation Questions 2-6.

Effectiveness and Validation Monitoring

Questions

1. Are the implemented management actions designed to protect the values of the special areas effective?
2. Are the special areas managed to restore, or prevent the loss of, outstanding values and to minimize disturbance?

Monitoring Requirements

1. Each special area will be monitored at least every three years to determine if the values for which it was designated are being maintained.
2. Each ACEC will be monitored annually to determine if proactive management actions met their objectives.

Cultural Resources Including American Indian Values

Expected Future Conditions and Outputs

- Identification of cultural resource localities for public, scientific, and cultural heritage purposes.
- Conservation and protection of cultural resource values for future generations.
- Provision of information on long-term environmental change and past interactions between humans and the environment.
- Fulfillment of responsibilities to appropriate American Indian groups regarding heritage and religious concerns.

Implementation Monitoring

Questions

1. Are cultural resources being addressed in deciding whether or not to go forward with forest management and other actions? During forest management and other actions that may disturb cultural resources, are steps taken to adequately mitigate disturbances?
2. What mechanisms have been developed to describe past landscapes and the role of humans in shaping those landscapes?
3. What efforts are being made to work with American Indian groups to accomplish cultural resource objectives and achieve goals outlined in existing memoranda of understanding and develop additional memoranda as needs arise?
4. What public education and interpretive programs were developed to promote the appreciation of cultural resources?

Monitoring Requirements

1. At least 20 percent of the files on each year's timber sales and other relevant actions (e.g., rights-of-way and instream structures) will be reviewed annually to evaluate documentation regarding cultural resources and American Indian values and decisions in light of requirements, policy, SEIS ROD Standards and Guidelines, and RMP management direction. If mitigation was required, review will ascertain whether such mitigation was incorporated in the authorization document and the actions will be reviewed on the ground after completion to ascertain whether the mitigation was carried out as planned.

2. The Annual Program Summary will address Implementation Questions 2-4.

Effectiveness and Validation Monitoring

Questions

1. Are sites of religious and cultural heritage adequately protected?

2. Do American Indians have access to, and use of, forest species, resources, and places important for cultural, subsistence, or economic reasons—particularly those identified in treaties?

Monitoring Requirements

1. All cultural resource sites where management and/or mitigation measures are utilized to protect the resource will be monitored at least once a year to determine if the measures were effective.

The balance is deferred to the SEIS Monitoring Plan.

Visual Resources

Expected Future Conditions and Outputs

- Preservation or retention of the existing character of landscapes on BLM-administered lands allocated for VRM Class I and II management; partial retention of the existing character on lands allocated for VRM Class III management; and major modification of the existing character of some lands allocated for VRM Class IV management.
- Continuation of emphasis on management of scenic resources in selected high-use areas to retain or preserve scenic quality.

Implementation Monitoring

Questions

1. Are visual resource design features and mitigation methods being followed during timber sales and other substantial actions in Class II and III areas?

Monitoring Requirements

1. Twenty percent of the files for timber sales and other substantial projects in VRM Class II or III areas will be reviewed to ascertain whether relevant design features or mitigating measures were included.

Effectiveness and Validation Monitoring

Questions

1. Are timber sales and other major actions in Class II and Class III areas meeting or exceeding visual resource management objectives?
2. Are visual resource management objectives being met consistently, over long periods of time, in Class II management areas?

Monitoring Requirements

1. All timber sales and other selected projects in VRM Class II areas, and at least 20 percent of sales or projects in Class III areas that have special design features or mitigating measures for visual resource protection, will be monitored to evaluate the effectiveness of the practices used to conserve visual resources.

2. In VRM Class II management areas where two or more sales or actions have occurred, impacts will be monitored at a minimum interval of five years.

Wild and Scenic Rivers

Expected Future Conditions and Outputs

- Protection of the outstandingly remarkable values (ORVs) of designated components of the National Wild and Scenic Rivers System through the maintenance and enhancement of the natural integrity of river-related values.

- Protection of the ORVs of eligible/suitable Wild and Scenic Rivers and the maintenance or enhancement of the highest tentative classification pending resolution of suitability and/or designation.

- Protection of the natural integrity of river-related values for the maintenance or enhancement of the highest tentative classification determination for rivers found eligible or studied for suitability.

Implementation Monitoring

Questions

1. Are BLM actions and BLM authorized actions consistent with protection of the ORVs of designated, suitable, and eligible, but not studied, rivers?

Monitoring Requirements

1. Annually, the files on all actions and research proposals within and adjacent to Wild and Scenic River corridors will be reviewed to determine whether the possibility of impacts on the outstandingly remarkable values was considered, and whether any mitigation identified as important for maintenance of the values was required. If mitigation was required, the relevant actions will be reviewed on the ground, after completion, to ascertain whether it was actually implemented.

2. The Annual Program Summary will report progress on preparation and revision of Wild and Scenic River management plans, their conformance with the Aquatic Conservation Strategy objectives, and the degree to which these plans have been implemented.

Effectiveness and Validation Monitoring

Questions

1. Are the ORVs for which the Wild and Scenic Rivers were designated being maintained?

2. Are the ORVs of the rivers which were found suitable or eligible, but not studied, protected?

Monitoring Requirements

1. Each river that was found suitable or eligible, but was not studied, will be monitored at least once a year to determine if the ORVs are being maintained.

Rural Interface Areas

Expected Future Conditions and Outputs

- Consideration of the interests of adjacent and nearby rural landowners (including residents) during analysis, planning, and monitoring related to managed rural interface areas. (These interests include personal health and safety, improvements to property, and quality of life.)
- Determination of how landowners might be, or are, affected by activities on BLM-administered land.

Implementation Monitoring

Questions

1. Are design features and mitigation measures developed and implemented to avoid/minimize impacts to health, life, property, and quality of life and to minimize the possibility of conflicts between private and federal land management?

Monitoring Requirements

1. At least 20 percent of all actions within the identified rural interface areas will be examined to determine if special project design features and mitigation measures were included and implemented as planned.

Effectiveness and Validation Monitoring

Questions

1. Are the rural interface area design features and mitigation measures effective in minimizing impacts to health, life, and property?

Monitoring Requirement

1. At least 20 percent of actions within the identified rural interface areas which had design features or mitigation measures will be examined following completion to assess the effectiveness of the action.

Socioeconomic Conditions

Expected Future Conditions and Outputs

- Contribution to local, state, national, and international economies through sustainable use of BLM-managed lands and resources and use of innovative contracting and other implementation strategies.

- Provision of amenities for the enhancement of communities as places to live and work.

Implementation Monitoring

Questions

1. What strategies and programs have been developed, through coordination with state and local governments, to support local economies and enhance local communities?

2. Are RMP implementation strategies being identified that support local economies?

3. What is the status of planning and developing amenities (such as recreation and wildlife viewing facilities) that enhance local communities?

Monitoring Requirements

1. The Annual Program Summary will address Implementation Questions 1-3.

Effectiveness and Validation Monitoring

Questions

1. What level of local employment is supported by BLM timber sales and forest management practices?

2. What were O&C and CBWR payments to counties?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Recreation

Expected Future Conditions and Outputs

- Provision of a wide range of developed and dispersed recreation opportunities that contribute to meeting projected recreation demand within the planning area.

- Provision of nonmotorized recreational opportunities and creation of additional opportunities consistent with other management objectives.

Implementation Monitoring

Questions

1. What is the status of the development and implementation of recreation plans?

Monitoring Requirements

1. The Annual Program Summary will address Implementation Question 1.

Effectiveness and Validation Monitoring

Questions

1. Based on the Statewide Comprehensive Outdoor Recreation Plan (SCORP) supply and demand data and public comments, is the range of recreation opportunities on BLM-administered lands (i.e., roaded versus unroaded) meeting public needs?

2. Are BLM developed recreation facilities meeting public needs and expectations, including facility condition and visitor safety considerations?

3. Are off-highway vehicle designations adequate to protect resource values while providing appropriate motorized vehicle recreation opportunities?

Monitoring Requirements

1. Each Special Recreation Management Area will be monitored at least every three years to determine if the types of recreation opportunities being provided are appropriate.

2. All developed recreation sites will be monitored annually to determine if facilities are being properly managed and all deficiencies documented.

3. All OHV designations will be reviewed annually to determine if revisions are necessary to protect resource values and resolve user conflicts.

Timber Resources

Expected Future Conditions and Outputs

- Provision of a sustained yield of timber and other forest products.
- Reduction of the risk of stand loss due to fires, animals, insects, and diseases.
- Provision of salvage harvest for timber killed or damaged by events such as wildfire, windstorms, insects, or disease in a manner consistent with management objectives for other resources.

Implementation Monitoring

Questions

1. By land-use allocation, how do timber sale volumes, harvested acres, and the age and type of regeneration harvest stands compare to the projections in the SEIS ROD Standards and Guidelines and RMP management objectives?
2. Were the silvicultural (e.g., planting with genetically selected stock, fertilization, release, and thinning) and forest health practices anticipated in the calculation of the expected sale quantity implemented?

Monitoring Requirements

1. The Annual Program Summary will report both planned and non-planned volumes sold. The report will also summarize annual and cumulative timber sale volumes, acres to be harvested, and stand ages and types of regeneration harvest for General Forest Management Areas, Connectivity/Diversity Blocks, and Adaptive Management Areas stratified to identify them individually.
2. An annual district-wide report will be prepared to determine if the silvicultural and forest health practices identified and used in the calculation of the ASQ were implemented. This report will be summarized in the Annual Program Summary.

Effectiveness and Validation Monitoring

Questions

1. Is reforestation achieving desired stocking?
2. Are stands growing at a rate that will produce the predicted yields?
3. Is the long-term health and productivity of the forest ecosystem being protected in the Matrix?

Monitoring Requirements

1. First, third and fifth year surveys will be used to determine if reforestation is meeting reforestation objectives.

The balance is deferred to the SEIS Monitoring Plan.

Special Forest Products

Expected Future Conditions and Outputs

- Production and sale of special forest products when demand is present and where actions taken are consistent with primary objectives for the land use allocation.

- Utilization of the principles of ecosystem management to guide the management and harvest of special forest products.

Implementation Monitoring

Questions

1. Is the sustainability and protection of special forest product resources ensured prior to selling special forest products?

2. What is the status of the development and implementation of specific guidelines for the management of individual special forest products?

Monitoring Requirements

1. The Annual Program Summary will address Implementation Questions 1 and 2.

Effectiveness and Validation Monitoring

Questions

1. Are special forest products being harvested at a sustainable level?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Noxious Weeds

Expected Future Conditions and Outputs

- Containment and/or reduction of noxious weed infestations on BLM-administered land using an integrated pest management approach.
- Avoidance of the introduction or spread of noxious weed infestations in all areas.

Implementation Monitoring

Questions

1. Are noxious weed control methods compatible with Aquatic Conservation Strategy objectives?

Monitoring Requirements

1. Review the files of at least 20 percent of each year's noxious weed control applications to determine if noxious weed control methods were compatible with Aquatic Conservation Strategy objectives.

Effectiveness and Validation Monitoring

Questions

1. Are management actions effectively containing or reducing the extent of noxious weed infestations?

Monitoring Requirements

1. At least 20 percent of the noxious weed sites subjected to treatment will be monitored to determine if the treatment was effective.

Fire/Fuels Management

Expected Future Conditions and Outputs

- Provision of the appropriate suppression responses to wildfires to meet resource management objectives and to minimize the risk of large-scale, high intensity wildfires.

- Utilization of prescribed fire to meet resource management objectives. (This will include, but not be limited to, fuels management for wildfire hazard reduction, restoration of desired vegetation conditions, management of habitat, and silvicultural treatments.)

- Adherence to smoke management/air quality standards of the Clean Air Act and State Implementation Plan standards for prescribed burning.

Implementation Monitoring

Questions

1. What is the status of the preparation and implementation of fire management plans for Late Successional Reserves and Adaptive Management Areas?

2. Have additional analysis and planning been completed to allow some natural fires to burn under prescribed conditions?

3. Do wildfire suppression plans emphasize maintaining late-successional habitat?

4. Are Wildfire Situation Analyses being prepared for wildfires that escape initial attack?

5. What is the status of the interdisciplinary team preparation and implementation of fuel hazard reduction plans?

Monitoring Requirements

1. The Annual Program Summary will address Implementation Questions 1-5.

Effectiveness and Validation Monitoring

Questions

1. Are fire suppression strategies, practices, and activities meeting resource management objectives and concerns?

2. Are prescribed fires applied in a manner which retains the amount of coarse woody debris, snags, and duff at levels determined through watershed analysis?

3. Are fuel profiles being modified to lower the potential of fire ignition and rate of spread and to protect and support land use allocation objectives by lowering the risk of high intensity, stand-replacing wildfires?

Monitoring Requirements

Deferred to the SEIS Monitoring Plan.

Appendix S. Plant Species Ranked by Relative Occurrence and Major Plant Groupings

The following three tables list the species commonly found within the planning area. In general, the listing is by relative abundance of species within the major plant grouping. The lists do not include all species found in the district, and the ranking is not based on district inventory data.

Table S-1. Conifer Species Ranked by Relative Occurrence and Major Plant Grouping

D/Ra/Sm	D/Ra/Vm	D/M-To	D/B/Sa	MC/IV/Gr
DF	DF	DF	DF	DF
WH	WH	WH	WH	WH
WRC	WRC	WRC	WRC	WRC
POC	GF	POC	GF	IC
GF	POC	SP	Y	GF
S	IC	LP		Y
LP	Y	KP		
Y		Y		
		JP		
		WWP		

Abbreviations used in the table:

Major Plant Grouping:

D/Ra/Sm = Douglas-fir/Red Alder/Salmonberry
D/Ra/Vm = Douglas-fir/Red Alder/Vine Maple
D/M-To = Douglas-fir/Madrone-Tanoak
D/B/Sa = Douglas-fir/Mixed Brush/Salal
MC/IV/Gr = Mixed Conifer/Interior Valley/Grass

Species:

DF = Douglas-fir
GF = Grand Fir
IC = Incense-cedar
JP = Jeffrey Pine
KP = Knobcone Pine
LP = Lodgepole Pine/Shore Pine
POC = Port-Orford-cedar
S = Sitka Spruce
SP = Sugar Pine
WH = Western Hemlock
WRC = Western Redcedar
WWP = Western White Pine
Y = Pacific Yew

Table S-2. Hardwood Tree Form Species Ranked by Relative Occurrence and Major Plant Grouping

D/Ra/Sm	D/Ra/Vm	D/M-To	D/B/Sa	MC/IV/Gr
RA	BLM	TO	RA	BLM
BLM	RA	M	BLM	RA
MY	CH	RA	CH	CH
TO	TO	MY	M	M
M	M	BLM	D	O
CA	D	A	CA	CO
D		O		A
C		CLO		D

Abbreviations used in above table:

Major Plant Grouping:
D/RA/Sm = Douglas-fir/Red Alder/Salmonberry
D/RA/Vm = Douglas-fir/Red Alder/Vine Maple
D/M-To = Douglas-fir/Madrone-Tanoak
D/B/Sa = Douglas-fir/Mixed Brush/Salal
MC/IV/Gr = Mixed Conifer/Interior Valley/Grass

Species:
A = Oregon Ash
BLM = Bigleaf Maple
C = Bitter Cherry and Common Chokecherry
CA = Cascara
CH = Golden Chinquapin
CLO = Canyon Live Oak
CO = Black Cottonwood
D = Pacific Dogwood
M = Pacific Madrone
MY = Oregon myrtle
0 = Oak (Oregon White and California Black)
RA = Red Alder
TO = Tanoak

Table S-3. Understory Brush and Herbaceous Species Ranked by Relative Occurrence and Major Plant Grouping

D/Ra/Sm	D/Ra/Vm	D/M-To	D/B/Sa	MC/IV/Gr
SW	SW	SW	SW	SW
SM	VM	SA	SA	SA
OX	SA	MZ	OR	RO
BR	BR	CE	SM	GR
SA	HU	RO	HU	HU
TH	OX	BR	TH	HA
HU	RO	HU	EL	PO
CE	PO	OC	VM	OC
OC	W	PO	BR	VM
HA	EL	W	PO	MZ
OR	MZ	BF	OC	CE
PO	CE	VM	SC	BR
BB	PS	GR	W	BF
VM	OC		MZ	SC
BF			CE	W
W			BF	PS
RO			GR	
MZ			PS	
DC				
PS				

Abbreviations used in above table:

Major Plant Grouping:
D/Ra/Sm = Douglas-fir/Red Alder/Salmonberry
D/Ra/Vm = Douglas-fir/Red Alder/Vine Maple
D/M-To = Douglas-fir/Madrone-Tanoak
D/B/Sa = Douglas-fir/Mixed Brush/Salal
MC/IV/Gr = Mixed Conifer/Interior Valley/Grass

Species:
BB = Blackberry (various species)
BF = Bracken fern
BR = Bryophytes (mosses, liverworts)
CE = Ceanothus (various species)
DC = Devils club
EL = Elderberry (Red and Blue)
GR = Grass (various species)
HA = Hazelnut
HU = Huckleberry (Evergreen and Red)
MZ = Manzanita (various species)
OC = Ocean-spray
OR = Oregon Grape
OX = Oxalis
PO = Poison oak
PS = Pacific Serviceberry
RO = Rhododendron
SA = Salal
SM = Salmonberry
SC = Scotch Broom
SW = Sword-fern
TH = Thimbleberry
VM = Vine Maple
W = Willow (various species)

Appendix T. Wildlife Species and Primary Habitat Associations in the Coos Bay District

Summary of Major Changes

- The federal and state species status for amphibians, reptiles, birds, and mammals that was included in Appendix III-I of the draft RMP is included in Appendix T in the final RMP.

- Neotropical bird species are identified.

Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District

Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hard-wood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Amphibians and Reptiles														
Northwestern Salamander					X			X	X		X	X		X
Long-toed Salamander					X			X	X	X	X			
Pacific Giant Salamander					X			X	X		X	X	X	X
Southern Torrent Salamander	BT	SV			X			X						
Clouded Salamander	BT	SU						X	X	X	X			X
California Slender Salamander	BA	SP						X			X	X	X	
Ensatina					X			X		X				X
Dunn's Salamander					X	X(T)		X			X	X	X	
Del Norte Salamander	FC2	SV				X(T)								
Siskiyou Mountains Salamander	FC2	SV				X								

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[2] C = Cliff T = Talus
[3] No primary habitat orientation for listed habitats (Brown 1985)
[4] Occurrence hypothetical only in the Coos Bay District
NOTE: See footnote on Table 3-32 for further explanation of categories

FE= Federal Endangered
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BS= Bureau Sensitive
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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status			Special and Unique Habitats					Temperate Coniferous Forest					
	Fed.	State	Neo-Tropical	Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	Hard-wood Forest
Amphibians and Reptiles														
Western Redback Salamander					X	X(T)		X		X	X	X	X	
Roughskin Newt					X				X	X	X	X	X	X
Western Toad	BT	SV			X			X	X	X				X
Pacific Tree Frog					X			X	X	X	X	X	X	X
Tailed Frog	BT	SV			X			X		X	X	X	X	
Red-legged Frog	FC2	SU			X									X
Foothill Yellow-legged Frog	FC2	SV			X									
Bullfrog					X									
Spotted Frog	FC	SC			X									
Painted Turtle	BS	SC			X									
Western Pond Turtle	FC2	SC			X			X	X	X				X

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

	Status				Special and Unique Habitats				Temperate Coniferous Forest					
Species	Fed.	State	Neo-Tropical	Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	Hard-wood Forest
Amphibians and Reptiles														
Loggerhead Sea Turtle[4]	FE	ST		X										
Green Sea Turtle[4]	FE	SE		X										
Leatherback Sea Turtle[4]	FE	SE		X										
Pacific Ridley Sea Turtle[4]	FT	ST		X										
Northern Alligator Lizard								X	X	X				X
Sagebrush Lizard						X(T)		X						
Western Fence Lizard						X		X	X	X				
Western Skink						X(T)		X						X
Rubber Boa								X	X	X				
Racer									X					X
Ringneck Snake					X			X	X	X				X
Gopher Snake														X
Western Aquatic Garter Snake					X									X

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

	Status				Special and Unique Habitats				Temperate Coniferous Forest					
Species	Fed.	State	Neo-Tropical	Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	Hard-wood Forest
Amphibians and Reptiles														
Western Terrestrial Garter Snake					X			X						X
Northwestern Garter Snake					X				X					
Common Garter Snake				X	X									X
Sharptail Snake[4]	BT	SV			X	X(T)		X						
Western Rattlesnake						X(C)		X						
California Mountain Kingsnake	BT	SP			X			X						
Common Kingsnake	BT	SP			X									
Birds														
Common Loon	BA			X	X									
Pacific Loon				X										
Yellow-billed Loon				X										

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hardwood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Pied-billed Grebe			X		X									
Horned Grebe	BT	SP		X	X									
Red-necked Grebe	BS	SC		X										
Eared Grebe			X	X	X									
Clark's Grebe			X	X	X									
Western Grebe			X	X	X									
Double-crested Cormorant			X	X	X	X(C)								
Brandt's Cormorant				X		X(C)								
Pelagic Cormorant				X		X(C)								
Fork-Tailed Peterel[3]	BA	SV	X											
Brown Pelican	FE	SE		X										
American Bittern			X	X	X									
Black-crowned Night Heron			X	X	X									
Green Heron			X	X	X									
Cattle Egret			X	X										

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hardwood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Snowy Egret	BA	SV	X	X	X									
Great Egret	BT	SU	X	X	X									
Great Blue Heron				X	X							X		
Tundra Swan				X	X									
Greater White-fronted Goose				X	X									
Snow Goose				X	X									
Canada Goose				X	X									
Aleutian Canada Goose	FT	SE		X	X									
Cackling Canada Goose	BT				X									
Dusky Canada Goose	BT			X	X									
Brant				X										
Wood Duck					X		X					X	X	
Green-winged Teal				X	X									
Mallard				X	X									

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

	Status			Special and Unique Habitats					Temperate Coniferous Forest					
Species	Fed.	State	Neo-Tropical	Coastal	Riparian Wetland	Cliffs/Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	Hardwood Forest
Birds														
Northern Pintail				X	X									
Blue-winged Teal				X	X									
Cinnamon Teal					X									
Northern Shoveler				X	X									
Gadwall				X	X									
Eurasian Wigeon				X	X									
American Wigeon				X	X									
Canvasback				X	X									
Redhead				X	X									
Ring-necked Duck	BT				X									
Greater Scaup				X	X									
Lesser Scaup	BT			X	X									
Harlequin Duck	FC2	SP		X	X						X	X	X	

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hard-wood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Oldsquaw				X										
Black Scoter				X										
Surf Scoter				X										
White-winged Scoter				X										
Common Goldeneye				X	X		X							
Bufflehead	BA	SP		X	X		X					X	X	
Hooded Merganser					X		X					X	X	
Common Merganser				X	X		X					X	X	
Red-breasted Merganser				X	X		X					X	X	
Ruddy Duck				X	X									
Turkey Vulture				X		X(C)			X				X	
Osprey				X	X		X					X	X	

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hard-wood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
White-tailed Kite	BT				X									
Bald Eagle	FT	ST		X	X		X						X	
Northern Harrier					X									
Sharp-shinned Hawk											X	X	X	
Cooper's Hawk											X	X	X	
Northern Goshawk	FC2	SC										X	X	
Red-shouldered Hawk					X									
Red-tailed Hawk									X				X	X
Rough-legged Hawk					X									
Golden Eagle									X					X

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

	Status			Special and Unique Habitats					Temperate Coniferous Forest					
Species	Fed.	State	Neo-Tropical	Coastal	Riparian Wetland	Cliffs/Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	Hardwood Forest
Birds														
American Kestrel					X		X		X					
Peregrine Falcon	FE	SE		X	X	X(C)								X
Merlin	BA			X	X									
Gyrfalcon				X										
Black-bellied Plover			X	X	X									
American Golden Plover			X	X										
Western Snowy Plover	FT	ST	X	X										
Semipalmated Plover			X	X	X									
Killdeer				X	X									
Black Oystercatcher				X										
Greater Yellowlegs	BA		X	X	X									

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	Status			Special and Unique Habitats					Temperate Coniferous Forest					
Species	Fed.	State	Neo-Tropical	Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	Hard-wood Forest
Birds														
Lesser Yellowlegs			X	X	X									
Solitary Sandpiper			X	X	X									
Willet			X	X										
Wandering Tattler			X	X										
Spotted Sandpiper			X	X	X									
Ring-necked Pheasant					X									
Blue Grouse									X	X	X	X	X	
Ruffed Grouse					X									X
Wild Turkey														X
California Quail														X
Mountain Quail	FC2								X	X				X
Virginia Rail			X		X									

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical		Special and Unique Habitats					Temperate Coniferous Forest				
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	Hard-wood Forest
Birds														
Sora			X		X									
American Coot				X	X									
Whimbrel			X	X										
Long-billed Curlew	BT		X	X										
Bar-Tailed Godwit			X	X										
Marbled Godwit			X	X										
Ruddy Turnstone			X	X										
Black Turnstone				X										
Surfbird				X										
Red Knot			X	X										
Sanderling			X	X										
Semipalmated Sandpiper			X	X	X									

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Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hard-wood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Western Sandpiper			X	X	X									
Least Sandpiper				X	X									
Baird's Sandpiper			X	X	X									
Pectoral Sandpiper			X	X	X									
Sharp-tailed Sandpiper					X									
Rock Sandpiper				X										
Dunlin			X	X	X									
Stilt Sandpiper			X	X										
Buff-breasted Sandpiper				X	X									
Ruff				X										
Short-billed Dowitcher			X	X										

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hardwood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Long-billed Dowitcher				X	X									
Common Snipe			X	X	X									
Red-necked Phalarope			X	X										
Red Phalarope			X	X										
Wilson's Phalarope			X	X	X									
Bonaparte's Gull			X	X	X									
Heermann's Gull				X										
Mew Gull				X	X									
Ring-billed Gull			X	X	X									
California Gull				X	X									
Herring Gull			X	X	X									

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Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hard-wood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Thayer's Gull				X										
Western Gull				X										
Glaucous-winged Gull				X										
Glaucous Gull				X										
Black-Legged kittiwake				X										
Sabine's Gull			X	X										
Caspian Tern	BT		X	X										
Common Tern			X	X	X									
Arctic Tern			X	X										
Common Murre				X										
Pigeon Guillemot				X										
Marbled Murrelet	FT	SC		X									X	

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Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	Hard-wood Forest
Birds														
Ancient Murrelet				X										
Cassin's Auklet				X										
Rhinoceros Auklet				X										
Tufted Puffin				X										
Rock Dove				X		X(C)								
Band-tailed Pigeon				X	X									X
Mourning Dove					X									
Common Barn-owl							X		X					X
Western Screech-owl					X		X							
Great Horned Owl					X				X			X	X	X
Snowy Owl				X	X									

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Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hard-wood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Northern Pygmy-owl	BT	SU					X					X	X	
Burrowing Owl	BS	SC		X					X					
Northern Spotted Owl	FT	ST					X					X	X	
Barred Owl							X					X	X	
Short-eared Owl			X		X									
Northern Saw-whet Owl									X			X	X	X
Common Nighthawk			X	X	X	X(T)			X					X
Black Swift			X			X(C)								
Vaux's Swift			X		X		X		X	X			X	
Anna's Hummingbird														X
Rufous Hummingbird			X		X				X	X		X		X

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Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hardwood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Allen's Hummingbird	BT		X						X	X				X
Belted Kingfisher			X	X	X	X(C)	X							
Lewis' Woodpecker	BS	SC					X	X						
Acorn Woodpecker	BT	SU					X							X
Red-breasted Sapsucker					X		X							
Downy Woodpecker					X		X							
Hairy Woodpecker							X	X				X	X	
Northern Flicker							X	X	X			X	X	X
Black-backed Woodpecker	BS	SC					X							
Pileated Woodpecker	BS	SC					X	X					X	

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Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hard-wood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Olive-sided Flycatcher			X									X	X	
Willow Flycatcher					X									
Hammond's Flycatcher												X	X	
Dusky Flycatcher[3]														
Pacific Slope Flycatcher													X	X
Black Phoebe	BT			X	X	X(C)								
Tropical Kingbird					X									
Western Kingbird[3]														
Horned Lark				X										
Purple Martin	BS	SC		X	X		X		X					
Tree Swallow					X		X		X				X	X
Violet-green Swallow					X	X(C)	X		X					
Northern Rough-winged Swallow					X	X(C)								

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Species	Fed.	State	Neo-Tropical	Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	Hard-wood Forest
Birds														
Cliff Swallow						X(C)								
Bank Swallow					X	X(C)								
Barn Swallow				X	X									X
Gray Jay										X	X	X	X	
Steller's Jay										X	X	X	X	
Scrub Jay														X
American Crow				X	X								X	
Common Raven						X(C)			X	X		X	X	X
Black-capped Chickadee					X		X							X
Mountain Chickadee							X							
Chestnut-backed Chickadee							X			X	X	X	X	

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	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Bushtit														X
Red-breasted Nuthatch							X	X				X	X	
White-breasted Nuthatch							X							
Brown Creeper							X					X	X	
Bewick's Wren								X	X					X
House Wren							X	X	X					
Winter Wren								X				X	X	
Marsh Wren					X									
American Dipper				X	X									
Golden-crowned Kinglet											X	X	X	X
Ruby-crowned Kinglet									X	X		X	X	
Western Bluebird	BT	SV					X		X					

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	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Townsend's Solitaire						X(C)		X	X	X		X	X	
Swainson's Thrush									X	X	X	X	X	X
Hermit Thrush									X	X		X	X	
American Robin					X				X	X				X
Varied Thrush												X	X	X
Wrentit				X										
Northern Mockingbird				X										
Water Pipit				X	X									
Cedar Waxwing			X											X
Northern Shrike[3]														
Loggerhead Shrike	FC	SU	X		X									

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Birds														
European Starling							X							X
Solitary Vireo												X	X	
Hutton's Vireo														X
Warbling Vireo			X											X
Orange-crowned Warbler			X						X	X				X
Nashville Warbler			X											X
Yellow Warbler			X											X
Yellow-rumped Warbler			X						X	X	X	X	X	X
Black-throated Gray Warbler			X						X	X	X	X	X	X
Townsend's Warbler			X									X	X	

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	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Hermit Warbler			X								X	X	X	
Palm Warbler			X		X									X
Black & White Warbler			X											X
MacGillivray's Warbler			X		X									
Common Yellowthroat			X		X									
Wilson's Warbler			X											X
Yellow-breasted Chat[3]														
Western Tanager			X						X			X	X	
Black-headed Grosbeak			X											X
Lazuli Bunting			X											
Rufous-sided Towhee									X	X				X

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	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Birds														
Chipping Sparrow			X						X	X				X
Vesper Sparrow			X	X										
Savannah Sparrow					X									
Fox Sparrow														X
Song Sparrow					X									X
Lincoln Sparrow			X		X									
Golden-crowned Sparrow					X									
White-crowned Sparrow			X						X					X
Harris' Sparrow[3]														
Dark-eyed Junco									X	X		X	X	X
Lapland Longspur				X										

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Birds														
Snow Bunting				X										
Red-winged Blackbird			X	X	X									
Western Meadowlark[3]														
Yellow-headed Blackbird			X		X									
Brewer's Blackbird			X	X	X				X					X
Brown-headed Cowbird			X		X				X	X				X
Northern Oriole			X		X									
Purple Finch										X			X	
House Finch[3]														
Pine Siskin			X		X				X	X	X	X	X	X
Lesser Goldfinch					X									
American Goldfinch														X

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Birds														
Evening Grosbeak									X	X	X	X		
House Sparrow[3]														
Mammals														
Virginia Opossum					X		X	X						X
Pacific Water Shrew					X			X						
Pacific Shrew					X			X	X					X
Trowbridge's Shrew				X				X			X	X	X	X
Vagrant Shrew					X				X					
Shrew-mole					X			X			X	X		X
Townsend's Mole					X				X					
Coast Mole					X				X	X				X
Big Brown Bat					X	X(C)	X		X				X	X

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[2] C = Cliff T = Talus
[3] No primary habitat orientation for listed habitats (Brown 1985)
[4] Occurrence hypothetical only in the Coos Bay District
NOTE: See footnote on Table 3-32 for further explanation of categories.

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hard-wood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Mammals														
Hoary Bat					X				X	X		X	X	X
California Bat					X	X(C)	X		X	X	X	X	X	X
Silvery-haired Bat							X			X	X	X	X	X
Long-eared Myotis					X		X				X	X	X	X
Little Brown Myotis					X		X		X	X		X	X	X
Fringed Myotis	BS	SV			X			X	X	X	X	X	X	X
Long-legged Myotis					X	X(C)	X			X	X		X	X
Yuma Myotis					X	X(C)	X		X			X	X	X
Townsend's Big-eared Bat	FC2	SC			X			X	X	X	X	X	X	
Coyote					X			X	X	X				X
Gray Fox								X						X

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hard-wood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Mammals														
Red Fox					X			X	X					X
Black Bear					X		X	X	X	X	X	X	X	X
Ringtail	BT	SU				X(T)								X
Raccoon				X	X		X		X	X	X	X	X	X
Southern Sea Otter	FT	ST		X										
River Otter				X	X									
American Marten	BS	SC					X	X				X	X	
Pacific Fisher	FC2	SC				X(T)	X	X				X	X	
Ermine						X(T)		X	X		X	X	X	X
Long-tailed Weasel								X	X	X				X
Mink				X	X			X						
Striped Skunk				X	X									
Spotted Skunk					X			X	X	X				X

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical	Coastal	Special and Unique Habitats				Temperate Coniferous Forest					Hardwood Forest
	Fed.	State			Riparian Wetland	Cliffs/Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Mammals														
Mountain Lion					X	X			X	X		X		
Bobcat					X	X		X	X	X				
Harbor Seal				X										
Northern Elephant Seal				X										
Stellar Sea Lion	FT	SC		X										
California Sea Lion				X										
Sei Whale	FE	SE		X										
Blue Whale	FE	SE		X										
Grey Whale	FE	SE		X										
Humpback Whale	FE	SE		X										
Finback Whale	FE	SE		X										
Sperm Whale	FE	SE		X										

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

	Status			Special and Unique Habitats					Temperate Coniferous Forest					
Species	Fed.	State	Neo-Tropical	Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	Hard-wood Forest
Mammals														
Right Whale	FE	SE		X										
Black-tailed Deer					X				X	X	X	X	X	
Roosevelt Elk					X				X	X		X	X	X
Mountain Beaver								X	X	X				X
Northern Flying Squirrel							X					X	X	
Western Gray Squirrel							X							X
California Ground Squirrel[3]														
Townsend's Chipmunk						X(T)		X		X	X	X	X	
Douglas Squirrel							X			X	X	X	X	
Western Pocket Gopher									X					X

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hard-wood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Mammals														
Gold Beach Pocket Gopher	FC2								X					
Bushy-tailed Woodrat						X		X			X	X	X	X
Dusky-footed Woodrat									X	X	X	X	X	X
Deer Mouse						X(T)		X	X	X				X
Western Harvest Mouse					X									X
White-footed Vole	FC2	SU			X			X				X		
Red Tree Vole											X	X	X	
Western Red-backed Vole								X			X	X	X	
Creeping Vole					X			X	X	X				X
Townsend's Vole					X				X					

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Appendix T. Wildlife Species and Primary Habitat[1] Associations in the Coos Bay District (Continued)

Species	Status		Neo-Tropical	Special and Unique Habitats					Temperate Coniferous Forest					Hardwood Forest
	Fed.	State		Coastal	Riparian Wetland	Cliffs/ Talus (C,T)[2]	Snags	Dead Down	Early Seral	Mid-Seral	Late Seral	Mature	Old-Growth	
Mammals														
Long-tailed Vole					X	X(T)		X	X					
Muskrat					X									
House Mouse[3]														
Norway Rat[3]														
Black Rat[3]														
Pacific Jumping Mouse					X				X					X
Porcupine						X(C)		X	X	X	X	X	X	X
Nutria					X									
Brush Rabbit									X	X		X		X
Beaver					X									

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Appendix U. Harvest Scheduling Models

Introduction

Early in the planning effort, in 1986, BLM began exploring the available model options for timber harvest scheduling. These models consider timber production capability, operations inventory, and forest plot data for a given land base according to alternative timber management prescriptions to determine potential annual timber harvest levels and their sustainability over the long term.

The model most relevant to BLM's needs was TRIM-PLUS, a binary search type model that functions much like the SIMIX model used by the BLM to generate Allowable Sale Quantities (ASQs) in the previous two decades. In the spring of 1987, BLM held public workshops in some of BLM's western Oregon offices to explain the TRIM-PLUS concepts. After considering comments, and testing the model on data from the late 1970s, BLM selected the TRIM-PLUS model for the 1990's RMP.

The TRIM-PLUS model was identified as the optimal approach for BLM because of its capabilities to do the following:

- Be accessible at the district level.
- Calculate individual non-declining harvest levels on multiple minimum harvest ages.
- Process various land use classes simultaneously.
- Provide enhanced report generating and graphics capabilities.
- Provide simplified input/output data (ease of use).
- Provide relatively inexpensive computer runs.

Although harvest scheduling models of various degrees of complexity were considered, the intent was to identify a relatively simple and reliable state-of-the-art system. BLM wanted to be able to interface the selected model with other specific resource analysis models/procedures such as an elk habitat model which will use our automated (mapped) resource database. This process will identify different land use allocations in terms of acres, and the model will reflect resulting harvest level impacts in a trackable fashion. TRIM-PLUS also has the capability to optimize investment levels.

The Allowable Sale Quantity Process

Calculation of Allowable Sale Quantity

The Allowable Sale Quantity (ASQ) refers to the maximum non-declining level of timber harvest sustainable over time. Estimated ASQs and harvest scheduling are derived through the TRIM-PLUS system by specifying current acreage, current volumes, and future management assumptions. ASQ volumes from TRIM-PLUS are in merchantable cubic feet. Equivalent estimates in board feet are provided to help interpret the information.

Current Acres

The derivation of current acres involves using the digitized (computerized) GIS map overlays and MICRO*STORMS data storage.

GIS Map Acres

Acres for the RMP were derived from digitized (computerized) GIS map overlays, with a separate map for each topic or theme addressed in the RMP. These maps can be overlaid or merged to allow analysis and generation of acres.

MICRO*STORMS Database

After being determined through GIS, acreage information is stored in a large relational database called MICRO*STORMS. In this system, data is separated into three primary files (Site, timber production capability classification [tpcc], and continuous forest inventory [cfi]), as follows:

File Name	No. Records	Description of File Contents
Site	6,431	Acreage, timber type, site, treatments
TPCC	4,082	Timber productivity classification
CFI	308	5-point plot data

Each file has a separate record of information for each plot or unit of land within the planning area. Each record contains many kinds of data. For example, the record in the Site File contains data on the Basic Resource Unit, Existing Stand Condition, acreage, timber type, site index, past and recommended treatments, timber volumes, stand age, and land use. Selected information from the three files are linked to the digitized (GIS) maps.

Basic Resource Units

Within TRIM-PLUS, data is segregated by resource area, site index, land use allocation, and kind of management or timber type. These groups of data are called Basic Resource Units (BRUs). The ASQ and other output data from TRIM-PLUS is reported by BRU and for groups of BRUs, as well as for the entire sustained yield unit. A total of 37 BRUs have been established for the district.

Existing Stand Conditions

Existing Stand Condition (ESC) codes are assigned to each BRU. ESC codes help to group, sort and track similar kinds of stands, and help place units of land into the proper BRU. This sorting is accomplished by giving each MICRO*STORMS Site File record an ESC code from the following list that best describes the forest.

Existing Stand Condition Codes

Code	ESC Description
1	Fully stocked second-growth (3-bar stocking)
2	Medium stocked second-growth (2-bar stocking)
3	Below minimum stocked second-growth (1-bar stocking)
5	Planted with genetically improved stock
6	Fertilized stand
7	Precommercially-thinned stand
10	Commercially thinned at age class 30
11	Commercially thinned at age class 30 and fertilized
12	Commercially thinned at age class 40
13	Commercially thinned at age class 40 and fertilized
14	Commercially thinned at age class 50
15	Commercially thinned at age class 50 and fertilized
16	Commercially thinned at age class 60
17	Commercially thinned at age class 60 and fertilized

18	Commercially thinned at age class 70
19	Commercially thinned at age class 70 and fertilized
20	Commercially thinned at age class 80
21	Commercially thinned at age class 80 and fertilized
22	Commercially thinned at age class 90
23	Commercially thinned at age class 90 and fertilized
24	Commercially thinned at age class 100
25	Commercially thinned at age class 100 and fertilized
26	Commercially thinned at age class 110
27	Commercially thinned at age class 110 and fertilized
31	Hardwood Conversion recommended
32	Hardwood stand with no conversion recommended
40	Other stands 36-500 years old and not previously harvested
50	Brushfield and backlog stands
51	Non-commercial conifer stand - no conversion recommended
60	Sold but not yet harvested or reforested
61	Harvested and waiting on site preparation
62	Site prepared and awaiting regeneration
70	Recreation or other cultural sites - reserved
99	Nonforest

Current Volumes

5-point Forest Inventory

Tree volumes on present stands are derived from 308 permanent inventory plots distributed throughout the planning area. Both conifers and hardwoods were cruised by certified BLM cruisers to the same standards used in timber sale preparation.

Cubic foot volumes were computed from the inventory data using a BLM software program called UNIT1. Summary plot data is stored in the MICRO*STORMS database file called CFI. These data include general site descriptors, board foot and cubic volume, growth, basal area, trees per acre, and average DBH and tree heights.

Empiric Yields

In contrast to yields from published stand tables or computer models, empiric yields are derived from existing plots. Empiric yields are preferred over published yield tables wherever sufficient plot data exists to build the yield curve.

A natural logarithmic regression was used to estimate empiric yields. The form of the model is:

GCACR = exponent $(B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4)$
Where GCACR = Gross Cubic Volume per Acre
X_1 = Site Index
X_2 = $1/\text{Age}^2$
X_3 = $1/\text{Age}$
X_4 = $(\text{Hardwood Volume} + 1)^2$
B = The numeric value of each variable

For all sites, empiric yield curves were generated for both managed and unmanaged conifer stands and hardwood conversion stands. For precommercially-thinned stands, empiric yields were calculated to stand age 50, the upper limit of available plot data.

Future Management Assumptions

Some assumptions about future management that directly affect the ASQ runs in TRIM-PLUS include: minimum harvest age, regeneration lag, future stocking levels, anticipated gains for planting genetically selected stock, frequency and acres of precommercial thinning, commercial thinning and fertilization, and the stand age when these treatments are applied. Details of these assumptions are available at the district office.

BRU Management Intensity (MI) Levels

Within each BRU in TRIM-PLUS are eight slots called MIs that can be used to simulate various management assumptions or intensity levels. Each MI requires information about yields and acres by age class, and about acreage shifts from one MI to another during growth and at final harvest. Specific configuration of the MIs varies within each BRU; however, the general configuration for all BRUs is as follows:

MI	Description
1	Below minimum stocked stands and hardwood conversion stands.
2	Medium- to fully-stocked stands, fertilized and commercially-thinned.
3	Phase I genetic acres, fertilized.
4	Phase I genetic acres, precommercially-thinned and fertilized.
5	Phase I genetic acres, precommercially- and commercially-thinned, and fertilized.
6	Phase II genetic acres, fertilized.
7	Phase II genetic acres, precommercially-thinned and fertilized.
8	Phase II genetic acres, precommercially- and commercially-thinned, and fertilized.

Most present district acres are in MI2. In future decades, acres will gradually be shifting to MI3 to MI5, and eventually to MI6, MI7, and MI8. A more detailed description of these MIs and assumptions are available at the district office.

Stand Projection System and Future Yields

As noted previously, most yields for MI1 and MI3 are empiric. Yields for MI3 to MI8 are estimated using the Stand Projection System (SPS), a computer program that simulates the growth and development of forest stands. The model is primarily designed for Douglas-fir or western hemlock stands, but will also simulate hardwoods and other species. Site index, fertilization, thinning, stocking levels, stand clumpiness and economics are some of the variables that SPS can use in making yield projections. The BLM version of SPS incorporates volume regressions and cruising standards from each western Oregon BLM district.

A series of SPS runs were made to determine what combinations of intensive practices give the best yields. For example, on site 125, a PCT at age 10, CT at age 40, and fertilizations at ages 11 and 41 gives maximum yield.

Gains from the genetic tree improvement program have been calculated by the district geneticist. To incorporate these gains into TRIM-PLUS, the SPS runs for MI3 to MI8 were adjusted upward by raising the site index until volume matched the anticipated height gain from planting improved stock. Details of this procedure are also available at the district office.

All SPS yields are gross volumes. Net volumes are derived by adjusting SPS yields for defect and breakage based on data from second-growth stands.

TRIM-PLUS ASQ Runs

When all of the acres, volumes, and management assumptions are assembled in the appropriate files in TRIM-PLUS, interactive ASQ runs are made to find the optimal harvest level. Output summaries are reviewed to assure that the output is correct and reasonable. After the total ASQ run is completed, further analysis of the contribution of each BRU, resource area, or land status can be made. Figure U-1 indicates the principal components and sequence in preparing an ASQ run.

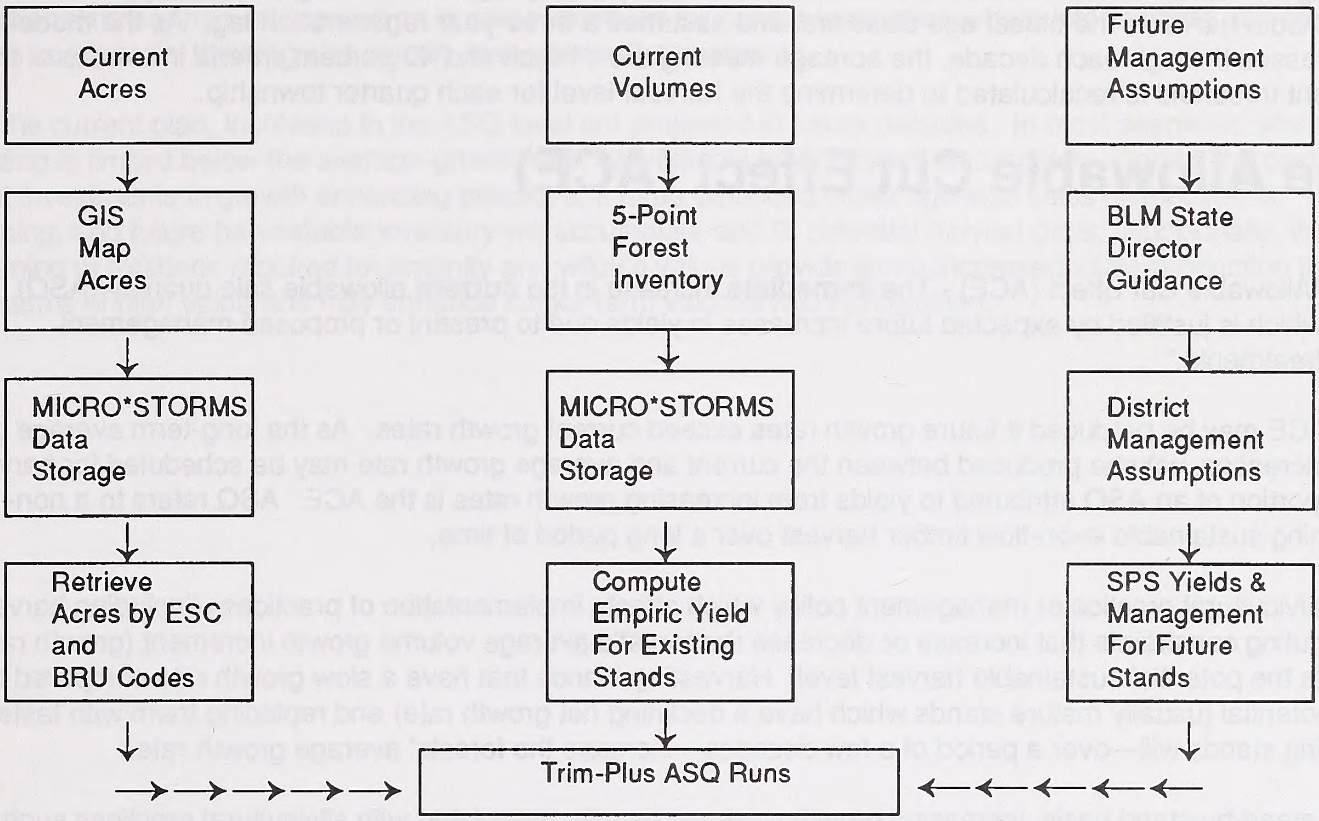
Figure U-1. ASQ Flowchart

Current Acres
GIS Map Acres
MICRO*STORMS Data Storage
Retrieve Acres by ESC and BRU Codes
Current Volumes
5-Point Forest Inventory
MICRO*STORMS Data Storage
Compute Empiric Yield For Existing Stands
Future Management Assumptions
BLM State Director Guidance
District Management Assumptions
SPS Yields & Management For Future Stands
Trim-Plus ASQ Runs

Alternative D - Harvest Scheduling Model

The spatial constraints of the 50-11-40 rule in Alternative D do not permit the use of TRIM-PLUS, the harvest scheduling model that was applied to all other alternatives. Under the 50-11-40 rule of Alternative D, timber harvest would only occur in a quarter township where 50 percent of BLM-administered land outside spotted owl habitat conservation areas (HCAs) are in stands of conifers averaging 11 inches in dbh and having a 40 percent canopy closure. As configured, TRIM-PLUS cannot track the decadal changes associated with growth and harvest specific to meeting the 50 percent threshold by quarter township.

To meet analysis needs for Alternative D, the BLM developed a simple harvest scheduling model within the forest stand database MICRO*STORMS to track the spatial constraints of 50-11-40.

The MICRO*STORMS Database contains the basic stand information needed to estimate the initial inventory status for every quarter township within an SYU. For each quarter township, MICRO*STORMS identifies the age class distribution for areas lying both in and out of the intensive forest land base. This age class distribution is further subdivided into acreage above and below 40 percent crown closure. Stands that are 40 years or older are assumed to meet the 11-inch requirement of the rule. The database also identifies the land base (i.e., lands categorized as nonforest, and HCAs 1 and 2) within each quarter township that are not subject to the 50-11-40 rule.

The acreage meeting the 11-inch dbh with 40 percent crown closure criteria above the 50 percent threshold (e.g., the acreage available for harvest) is identified by quarter township. Next, an 80-year rotation constraint is applied on the intensive land base within each quarter township. Then, a harvest level is determined for a quarter township for any given harvest period by comparing the available acreage above the 50 percent threshold to that available by the rotation constraint and selecting whichever offers the least harvest volume.

In the MICRO*STORMS model, which uses a single production function, each age class is assigned one average volume. These volumes are recalculated as the model progresses through time to approach normality. The model harvests the oldest age class first and assumes a three-year regeneration lag. As the model progresses through each decade, the acreage meeting the 11-inch and 40 percent criteria in excess of the 50 percent threshold is recalculated to determine the harvest level for each quarter township.

The Allowable Cut Effect (ACE)

> "Allowable Cut Effect (ACE) - The **immediate** increase in the **current** allowable sale quantity (ASQ) which is justified by expected future increases in yields due to present or proposed management treatments."

The ACE may be produced if future growth rates exceed current growth rates. As the long-term average growth rate increases, volume produced between the current and average growth rate may be scheduled for harvest. That portion of an ASQ attributed to yields from increasing growth rates is the ACE. ASQ refers to a non-declining sustainable even-flow timber harvest over a long period of time.

Any silvicultural practice or management policy which affects implementation of practices—including harvest scheduling constraints that increase or decrease the forest's average volume growth increment (growth rates)—affects the potential sustainable harvest level. Harvesting stands that have a slow growth rate compared to their site potential (usually mature stands which have a declining net growth rate) and replacing them with faster growing stands will—over a period of a few decades—increase the forests' average growth rate.

On a stand-by-stand basis, increasing growth rates are usually associated with silvicultural practices such as precommercial/commercial thinning, fertilization, or planting genetically-selected seedlings. Combinations of these silvicultural practices may increase harvestable stand volumes by 10 to 25 percent. Those treated stands can provide opportunities for commercial thinning or earlier regeneration harvest.

Management for non-timber values such as wildlife habitat enhancement have a wide range of effects on growth rates. Retention of late-successional stands, or conversion of fast growing stands to mature or late-successional stage stands, reduces current forest growth rates.

ACE may be influenced by silvicultural practices that extend the period of maximum growth rates in natural or managed stands. Practices such as thinning can delay culmination of mean annual increment (CMAI). The net effect is to maintain stands with high growth rates within the range of maximum value for longer periods. These conditions may balance, maintain, or slightly increase forest growth rates.

Realizing harvests that include the "ACE effect" is dependent on a number of factors besides growth rates. The ASQ is sensitive to a number of factors which include: existing stand conditions, age-size class distributions, land use allocations, wildlife habitat needs, management rules on proximity of harvest units, minimum harvest age, harvest scheduling restrictions, and the extent of investments in growth-enhancing practices. The potential ACE occurs only to the extent that all such factors— when applied in concert—allow contributions to ASQ from increases in future forest growth rates.

ASQ sensitivity tests were made to determine how much of the current ASQ might be attributed to various levels of growth- enhancing practices such as precommercial thinning, fertilization, and planting genetically-selected seedlings. Current forest conditions often limited ACE although future average forest growth rates were increased. An ACE effect was generally found where slower growing (mature) stands were converted to faster growing stands. When factors affecting 10- to 50-year stands (such as their landscape locations, land use restrictions, or age-size class distribution) cause a harvest volume gap, no ACE is possible for this decade. Likewise, first or early decade harvesting of only stands growing at near maximum growth rates does not produce a measurable ACE.

Investments in growth-enhancement practices should not be evaluated by the "current" ACE alone. The evaluation must also be based on: sustaining the potential enhancement of the average forest growth rate, economic guidelines for returns on growth, and product quality. A recent Office of Inspector General Audit Report, No 94-I-359, found forest development growth-enhancing practices very cost effective in areas identified for traditional timber harvest, as well as in areas identified for habitat restoration where intermediate harvests (such as commercial thinning and density management) are allowed.

Under the current plan, increases in the ASQ level are projected in future decades. In most scenarios where harvesting is limited below the average-growth rate, harvestable inventory will accumulate. Combining past and present investments in growth enhancing practices, a more balanced better age-size class distribution is developing, and future harvestable inventory will accumulate and fill potential harvest gaps. Additionally, the lengthening of rotations required for amenity and wildlife values provide some increased value production through larger stems of high value and may enhance longer-term volume/value production.

Appendix V. Analytical Assumptions About Global Climate Change

Many scientists have predicted significant global warming within the next 60 years due to increasing levels of carbon dioxide and other gases in the atmosphere. Others have further hypothesized a climate change in western Oregon that would make it difficult or impossible to maintain, without change, the current ecosystems, including the major forest tree species. Among the relevant uncertainties, it is expected that warmer and drier weather would increase the incidence of wildfire, but warmer and wetter weather might reduce it. Rapid change may make the forest more susceptible to insect and disease attack because generational succession occurs much more quickly among pests than among trees. Other possible effects include raising soil temperatures and lengthening summer droughts. This could shift the range of Douglas-fir forest toward higher elevations, reduce the range for current high-elevation species, and increase the range for dry land species such as lodgepole and ponderosa pine. These shifts and changes could affect management practices, particularly stand establishment and manipulation. Assuring adequate tree regeneration would probably be the most serious management problem in areas that become marginal (Regens et al. 1989).

There is, however, no scientific consensus about the expected extent or rate of global warming nor the probable effect on forest ecosystems in western Oregon. Neither the environmental record nor the limited capabilities of the climate models permit a reliable forecast of climate changes (NAS 1991).

Furthermore, available models show marked differences in their predictions of change in western Oregon (Joyce et al. 1990). In addition, the most commonly predicted temperature changes are not expected to affect woody biomass production or the dominance of Douglas-fir in the region, although they could alter codominant species composition in older forests (Dale and Franklin 1989). At the high end of the range of predicted changes, however, are temperature increases that could be great enough, by around the middle of the 21st century, to inadequately meet the winter chilling requirement for Douglas-fir to start growth again in the spring (Lavender 1989).

The increasing carbon dioxide levels are generally thought to be beneficial to plant growth, but available information does not suggest which forest tree species may be most responsive to that increase or how their responsiveness may also be affected by any changes in climate or by fertilization in managed forests.

Although climate change may occur and affect—in a number of decades—the species composition of the forest, it is not considered likely to affect forestry practices during the expected ten-year life of the plan. Nonetheless, the plan incorporates a process of adaptive management (see Chapter 2, Management Direction Common to All Alternatives, Use of the Completed Plan) which permits effective response to changing knowledge. With adaptive management, the BLM will be able to adjust if—during the life of the plan—a scientific consensus emerges that indicates forestry practices should be modified promptly in anticipation of global warming effects.

Appendix W. Ten-Year Mineral Development Scenarios

Introduction

This appendix describes the Reasonably Foreseeable Development (RFD) scenarios for leasable, locatable, and salable mineral commodities. The purpose of the RFD scenario is to provide models that anticipate the level and type of future mineral activity in the planning area, and to serve as a basis for cumulative impacts analysis. The RFD first describes the steps involved in developing a mineral deposit, with presentation of hypothetical exploration and mining operations. The current activity levels are discussed in Chapter 3 of this document. Discussions about future trends and assumptions affecting mineral activity are followed by the prediction and identification of anticipated mineral exploration and development.

Scope

The development scenario is limited in scope to BLM-administered lands in the planning area. The RFD is based on the known or inferred mineral resource capabilities of the lands involved, and applies the conditions and assumptions discussed under Future Trends and Assumptions. Changes in geologic data and/or economic conditions that alter the RFD would result in some deviation over time.

Leasable Minerals

Reasonably Foreseeable Development of Oil and Gas Resources (Common to All Alternatives)

Future Trends and Assumptions

Based on the history of past drilling and foreseeable development potential in the planning area, activity over the next decade would continue to be sporadic. Even though the central portion of the Coos Bay District has been evaluated as having a high potential for the development of hydrocarbons, it is not anticipated that there would be a discovery of producible oil and gas fields within the district during the plan period. Oil and gas activity is expected to consist of the issuance of competitive and over-the-counter leases, geophysical surveys, and perhaps the drilling of three exploratory wells.

Some exploration for natural gas is predicted. The supply of natural gas in the region has been plentiful and is forecast to remain that way in the future. The price of natural gas recently dropped and predictions are that future prices may stay at, or close to, the current price. Recent economic conditions within the oil industry also resulted in a decline in the number of active exploratory wells being drilled in other parts of the nation. Continued low prices and depressed economic conditions would result in a nationwide decrease in domestic exploration and development. A turnaround in the oil industry, or an increase in the price of oil and gas purchased from other countries, would spur an increase in demand for domestic production, increasing the number of wells drilled.

Geophysical Explorations

Geophysical exploration is conducted to try to determine the subsurface structure of an area. The three geophysical survey techniques generally used to define subsurface characteristics are measurements of the gravitational field, magnetic field, and seismic reflections.

Gravity and magnetic field surveys involve small portable measuring units which are easily transported via light-weight off-highway vehicles (such as four-wheel drive vehicles) or aircraft. Both off-highway and on-highway travel may be necessary in these two types of surveys. Usually a three-man crew transported by one or two vehicles is required. These two survey methods can make measurements along defined lines, but it is more common to have a grid of discrete measurement stations.

Seismic reflection surveys, which are the most common of the geophysical methods, produce the most detailed subsurface information. Seismic surveys are accomplished by sending shock waves, generated by a small explosion or mechanically beating of the ground surface, through the earth's surface, reflecting off some layers, thus depicting the underlying structure of the rock. The thumper and vibrator methods pound or vibrate the ground surface to create a shock wave. Usually four large trucks are used, each equipped with pads about four-feet square. The pads are lowered to the ground, and the vibrators are electronically triggered from the recording truck. Once information is recorded, the trucks move forward a short distance and the process is repeated. Less than 50 square feet of surface area is required to operate the equipment at each recording site.

The small explosive method requires that charges be detonated on the surface or in a drill hole. Holes for the charges are drilled utilizing truck-mounted portable drills to drill small-diameter (two to six-inch) holes to depths of 100 to 200 feet. Generally 4 to 12 holes are drilled per mile of line and a 5 to 50-pound charge of explosives is placed in the hole, covered, and detonated. The created shock wave is recorded by geophones placed in a linear fashion on the surface. In rugged terrain, a portable drill carried by helicopter can sometimes be used. A typical drilling seismic operation may utilize 10 to 15 men operating five to seven trucks. Under normal conditions, three to five miles of line can be surveyed daily using this method. The vehicles used for a drilling program may include heavy truck-mounted drill rigs, track-mounted air rigs, water trucks, a computer recording truck, and several light pickups to transport people conducting the survey.

Public and private roads and trails are used where possible. However, off-highway cross-country travel is also necessary in some cases. Graders and dozers may be required to provide access to remote areas. Several trips a day are made along a seismograph line, usually resulting in a well-defined two-track trail. Drilling water, when needed, is usually obtained from private landowners.

A Notice of Intent authorizes geophysical exploration when there is no mineral lease on the tract. It is anticipated that one Notice of Intent, involving seismic reflection surveys would be filed during the life of this plan.

The surface charge method utilizes charges of between one and five pounds attached to wooden laths three to eight feet above the ground. Placing the charges lower than six feet usually results in the destruction of vegetation, while placing the charges higher, or on the surface of deep snow, results in little visible surface disturbance.

Surface Impacts of Geophysical Explorations

It is anticipated that the foreseeable geophysical explorations for oil and gas in the planning area will consist of seismic reflection surveys, utilizing approximately 10 miles of existing roads. Surface impacts would involve temporary blockage of the roads by the four large trucks used to gather the data with a vibrating platform, but this type of equipment is not expected to damage the roads.

The small explosive method is also anticipated to be used on approximately 20 miles of line. Surface disturbance is expected to consist of drilling four to twelve holes per mile of line. Each drill hole would impact about 200 square feet, but 90 percent of these holes are expected to be drilled on existing landings, spur roads, or timber haul roads. Altogether, 7,200 square feet (approximately 0.2 acre) of existing road surface would temporarily be impacted by drilling activities and low power blasting.

Blasting would not be powerful enough to impact any surface resources or improvements. It is anticipated that four drill holes would be made on currently undeveloped areas. The drill pads would impact approximately 200 square feet each with short spur roads (100 feet long and 25 feet wide) constructed to each drill hole location. Surface disturbance of these four drill holes would affect approximately 0.25 acre. The total surface disturbance using the drilling, blasting method is expected to total approximately 0.5 acre.

Drilling Phase

One Notice of Staking is anticipated during the plan period. It is anticipated that the company would then also submit an Application to Drill (APD) after the Notice of Staking is accepted. Private surface owner input would be actively solicited during this stage. Once the APD is approved, the operator may begin construction activities in accordance with stipulations and conditions. When a site is chosen that necessitates the construction of an access road, the length of road may vary, but usually the shortest feasible route is selected to reduce the haul distance and construction costs. In some cases, environmental factors or a landowner's wishes may dictate a longer route. Drilling activity in the planning area is predicted to be done using existing roads and constructing short (approximately 0.25 mile) roads to access each drill site location.

Based on past oil and gas drilling in Oregon, it is projected that three exploratory "wildcat" wells would be drilled on BLM-administered land in the planning area. The estimated success rate of finding hydrocarbons is predicted to be no greater than 10 percent, based on the average U.S. wildcat well success rate. Drilling is expected to occur in an area of "high" oil and gas potential, which are located in the central and northern part of the district. There is approximately 1 in 50 chances of new field discovery during the life of the plan, with a strong likelihood that any such discovery would be natural gas, since current western Oregon production to date has been natural gas.

Surface Impacts of Drilling

During the first drilling phase, the operator would move construction equipment over existing maintained roads to the point where the new access road begins. No more than 0.25-mile of moderate duty access road with a surface 18 to 20 feet wide is anticipated to be constructed. The surface disturbance width would average 40 feet including ditches, cuts, and fills; acreage impacted by road building would total approximately three acres.

The second part of the drilling phase is the construction of the drilling pad or platform, anticipated to involve approximately two acres per well site. Support facilities are anticipated to disturb about two acres per well site. The likely duration of well development, testing, and abandonment is predicted to be approximately six months for each drill site. Altogether, the total disturbance for the exploratory wells, support services, and new road construction is expected to be approximately 12 acres. The surface disturbance would be restricted, as much as possible, to previously disturbed areas such as logging roads and landings.

Producing Phase

One gas field of 50-60 billion cubic feet (BFC) could be discovered on BLM-administered lands at a depth of 2,000 to 3,000 feet during the plan period. It is estimated that the productive life span of this field would be about 10 years. The size of the field would be approximately 200 acres and the well spacing would be about 160 acres (one well per quarter section). It is anticipated that the field would require four development wells in addition to the discovery well. All gas production would be carried by pipelines for a distance of approximately 40 miles. All well service requirements would be provided by established service companies.

Surface Impacts of Field Development and Production

Each development well pad would be approximately two acres in size and, as a result, a total of eight acres would be involved in drill pad construction. New roads leading to each of these drill pads would have to be constructed and it is estimated that each new road would be about 0.25 mile in length with a right-of-way width of 40 feet. Altogether, approximately 1.25 acres would be involved for each newly constructed road, and the total surface disturbance attributed to new road construction would be five acres. A pipeline 40 miles in length with a right-of-way width of 30 feet would disturb about 145 acres. Due to the checkerboard public land ownership in this area, it is estimated that only about 50 percent of that acreage would be on public lands administered by the BLM. Altogether, it is estimated that about 73 acres of BLM-administered land would be impacted from pipeline construction. The total surface disturbance of field development and production would be approximately 86 acres.

Plugging and Abandonment

Wells that are completed as dry holes are plugged according to a plan designed specifically for the down-hole conditions of each well. Plugging is accomplished by placing cement plugs at strategic locations from the bottom of the well to the surface. Drilling mud is used as a spacer between plugs to prevent communication between fluid-bearing zones. The casing is cut off at least three feet below ground level and capped by welding a steel plate on the casing stub. It is predicted that the three exploratory wells drilled would be plugged and abandoned.

Surface Impacts of Plugging and Abandonment

After plugging, all equipment and debris would be removed and the drill site would be restored as near as reasonably possible to its original condition. If the 0.25 mile of new road constructed for drilling is not needed for future access to the area, the road would be reclaimed using a winged subsoiler, waterbars installed if necessary, and the road prism revegetated as required by the Authorized Officer.

Reasonably Foreseeable Development of Coal Resources (Common to All Alternatives)

Future Trends and Assumptions

Based on the history of past mining activity and foreseeable development potential in the plan area, mining activity over the next 10 years will continue to be minimal at best. No significant increase in coal development is anticipated because the quality and mineability of the coal in the Coos Bay District varies greatly. One or two exploration holes are anticipated. The national supply of coal has been plentiful and is forecast to remain that way. In summary, little demand is expected for local coal reserves.

Exploration

As with oil and gas, coal exploration operations could take place on leased or unleased public land. Depending upon the status of the land (leased/unleased), the status of the applicant (lessee/nonlessee), and the type of operation proposed, (drilling, trenching, or surface mapping), several types of authorizations could be used if the proposed exploration exceeds “casual use,” as defined in 43 CFR 3480.1. In all cases, the authorizations require compliance with the National Environmental Policy Act and approval by the Authorized Officer. As with oil and gas, the operator would be required to comply with all terms and conditions of the permits, regulations, and other requirements, including reclamation, prescribed by the Authorized Officer. Monitoring for compliance with these requirements would be done during the execution of the operations and upon their completion.

Surface Impacts of Prospecting

Types of surface-disturbing activity associated with coal exploration include field mapping, establishing a grid system to determine a logical mining unit, and frequently using off-highway vehicles with a small auger drilling unit to determine the feasibility of the field.

Mining Phase

Mine Development

If exploration results show that an economically mineable deposit is present, a lease is acquired and activity intensifies to obtain detailed knowledge regarding reserves and possible mining methods. This process involves applying all the previously utilized exploration tools in a more intense effort. Once enough information is acquired, a feasibility study is made to decide whether to proceed with mine development and which mining methods would be utilized. Because of the geology of that portion of the Coos Bay District where coal is located, however, the only feasible way to mine coal would be through underground methods.

Once the decision to develop the property is made, the mine permitting process commences. Upon approval, work begins on development of the mine infrastructure. This includes constructing the offices and laboratory, prestripping in preparation for mining, building of access haul roads, and placing of utility services. During this time additional refinement of ore reserves is made.

Once the facilities are in place, actual mine production begins. Concurrent with production there often are "satellite" exploration efforts to expand the mine's reserve base and extend the project life. Reclamation of the property is conducted concurrently with, or upon completion of, the mining operation.

Activities that could occur on these lands include: actual mining; coal processing; tailings disposal; waste rock placement; and placement of support facilities such as repair shops, labs, and offices. Such activities involve the use of heavy earthmoving equipment and explosives for mining and materials handling, hazardous or dangerous reagents for processing requirements, and general construction activities. The size of mines varies greatly and not all mines would require all the previously mentioned facilities and equipment. Acreage involved can range from a few acres to several hundred acres, with some underground operations disturbing 100 acres or more.

Surface Impacts of a Coal Mine Development

Less than 50 acres is expected to be involved in the mining of coal in the planning area over the next decade.

Reasonably Foreseeable Development of Geothermal Resources (Common to All Alternatives)

Future Trends and Assumptions

With environmental protection and enhancement being a major consideration in the Pacific Northwest, clean, low-impacting energy sources are becoming more important. The energy surplus in the region is expected to be depleted near the end of the decade. The abundant geothermal resources thought to be present in the northwest, however, are essentially undeveloped. To encourage resource development, the Bonneville Power Administration is offering to participate in three geothermal pilot projects. The three projects are east of the Cascade Range, in totally different geologic environments. There is little probability that there would be any geothermal development in the Coos Bay District during the life of the plan.

Locatable Mineral

Reasonably Foreseeable Development of Locatable Mineral Resources (Common to All Alternatives)

Future Trends and Assumptions

The major commodities of interest would continue to be the precious metals, gold and silver; with nickel and cobalt ores also becoming economically important in the Coos Bay District. This premise is based on a combination of price and the favorable geology for mineral occurrences. Reclamation science would continue to advance due to experience and research. This factor is most important with regards to the nickel laterite deposits. A more detailed design effort will be placed on the reclamation of mined lands in the future. This emphasis would lead to an overall increase in reclamation costs, but those costs should pay dividends in the long term with increased reclamation success.

The economics of mining in the planning area would largely depend upon the relationship between production costs and the market price of the commodity. While production costs can be controlled, or anticipated through management and technology, the big unknown will be the price of the mineral commodities. The overall profitability of an operation (mainly involves the level of activity at the prospecting, exploration, and mining phases) for development of ore bodies will be closely related to the price of the mineral commodity.

No chemical heap leaching operations are forecast during the plan period; however, any such operation proposed would be subjected to environmental review under a Plan of Operations pursuant to regulations found in 43 CFR 3809. All locatable mineral operations will be monitored pursuant to these regulations and the policies shown in Appendix M.

Reconnaissance Phase

Reconnaissance level activity is the first stage in exploring for a mineral deposit. This process involves the initial literature search of an area of interest, using available references such as publications, reports, maps, and aerial photos. The area of study can vary from hundreds to thousands of square miles. Activity that would normally take place includes large scale mapping, regional geochemical and geophysical studies, and remote sensing with aerial photography or satellite imagery. The type of surface-disturbing activity associated with reconnaissance level mineral inventory usually consists of occasional sampling to determine stream sediment, soil, or rock composition. Minor off-highway vehicle use may be required.

Prospecting

The prospecting area of interest is identified through reconnaissance of areas having anomalous geochemical or geophysical readings, unique geologic structures or features, the occurrence of typical mineral-bearing formations, or a historical reference to past mineral occurrence. This area may range from a square mile to an entire mountain range of several hundred square miles.

Activity that will take place in an effort to locate a mineral prospect includes more detailed mapping, sampling, and geochemical and geophysical study programs. This is the time when property acquisition efforts usually begin and most mining claims are located to secure ground while trying to make a mineral discovery.

Surface Impacts of Prospecting

Types of surface-disturbing activity associated with prospecting generally involve soil and rock chip sampling using mostly hand tools, possibly off-highway vehicle use, and placement and maintenance of mining claim monuments. This activity is normally considered “casual use” (43 CFR 3809.1-2) and does not require BLM notification or approval. Surface disturbances by these activities are anticipated to be less than 0.01 acre for each prospecting venture.

Exploration Phase

Upon location of a sufficiently anomalous mineral occurrence, or favorable occurrence indicator, a mineral prospect is established and is subjected to more intense evaluation through exploration techniques. Activities that take place during exploration include those utilized during prospecting but at a more intense level in a smaller area. Activities such as road building, trenching, and drilling are also conducted. In later stages of exploration, an exploratory adit or shaft may be driven. In addition, if the prospect already has underground workings these may be sampled, drilled, or extended. Exploration activities utilize mechanized earth moving equipment and drill rigs, and may involve the use of explosives.

Exploration for uncommon variety silica sand could occur on lands with sand dunes on the North Spit west of Coos Bay/North Bend, Oregon.

Surface Impacts of Placer Exploration

Placer exploration consists of test pit digging either by hand or with a backhoe or hydraulic excavator. It is predicted that six Notices would be received during the plan period. A typical Notice would describe minor road construction necessary for accessing three test pit locations. The size of each test pit is predicted to be about 5 feet square, and 10 to 15 feet deep. It is anticipated that three temporary access roads approximately 200 feet long and 25 feet wide would be necessary to reach the test pit locations with the equipment, affecting roughly a total of 0.3 acre of new roads. Support facilities would utilize approximately one acre. Altogether, each Notice-level operation would utilize approximately 1.3 acres of land, and during the plan period the expected six operations would disturb approximately eight acres of land.

If low mineral values are discovered, the pits would be backfilled and the area seeded and fertilized as described in the policies shown in Appendix M. If significant mineral values are discovered, then the Notice level operation is predicted to develop into a Plan level of operation as described under the Bench Placer RFD.

Surface Impacts of Uncommon Variety Silica Sand Exploration

Exploration for silica sand of an uncommon purity would involve no road construction on dunal areas to reach the deposit. Sampling would be conducted along the side of the roads, so no additional site disturbance would be necessary in the construction of a drill pad.

Surface Impacts of Laterite Placer Exploration

It is anticipated that one Plan of Operation would be filed during the plan period pursuant to 43 CFR 3809.1-4. It is predicted to be for a nickel laterite exploration project, and approximately 10 holes would be drilled utilizing truck mounted drill rigs. Each drill site would disturb less than 0.1 acre. Temporary access roads would be constructed for three of the drill holes, but in most cases the existing roads would be utilized. Each of these temporary access roads would be approximately 300 feet long and 40 feet wide, including roadcuts, ditches, and fill slopes involving approximately 0.25-acre for each road (0.75 acre total). Support facilities may be necessary, affecting approximately one acre. Altogether, during the first phase of exploration, it is anticipated that 2.75 acres would be disturbed.

In the second phase of exploration, it is predicted that the operator would conduct drilling and sampling on a defined grid to better evaluate the amount of ore reserves within the project area. Additional equipment access roads would be necessary to complete this exploratory drilling, and it is estimated that 10 temporary access roads (of the length and width mentioned above) would be necessary to conduct this drilling, affecting about 2.5 acres. The ten new drill holes collectively would disturb about one acre. Altogether, the second phase of exploration would disturb an additional 3.5 acres. The total anticipated acreage involved in the plan-level lode exploration project would be approximately 6.25 acres.

Mining Phase

If exploration results show that an economically viable mineral deposit is present, activity intensifies to obtain detailed knowledge regarding reserves, possible mining methods, and mineral processing requirements. This process involves applying all the previously utilized exploration tools in a more intense effort. Once enough information is acquired, a feasibility study is made to decide whether to proceed with mine development and which mining and ore processing methods will be utilized.

When the decision to develop the property is made, the mine permitting process begins. Upon approval, work begins on development of the mine infrastructure. This includes constructing the mill, offices and laboratory, prestripping in preparation for open pit mining, building of access and haul roads, and placing of utility services. During this time additional refinement of ore reserves is made.

When facilities are in place, actual mine production begins. Concurrent with production there often are “satellite” exploration efforts to expand the mine’s reserve base and extend the project life. Reclamation of the property is conducted concurrently with, or upon completion of, the mining operation. Often subeconomic resources remain unmined and the property is dormant, waiting for changes in commodity price or production technology that would make these resources economic.

Activities that could occur on these lands include: actual mining, ore processing, tailings disposal, waste rock placement, solution processing, metal refining, and placement of support facilities such as repair shops, labs, and offices. Such activities involve the use of heavy earthmoving equipment and explosives for mining and materials handling, exploration equipment for refinement of the ore reserve base, hazardous or dangerous reagents for processing requirements, and general construction activities. These activities will probably involve 40 to 60 full-time employees.

The size of mines varies greatly, and not all mines would require all the previously mentioned facilities and equipment. Acreage involved can range from a few acres to several hundred acres, with most projects disturbing 100 acres or less, requiring both a Plan of Operations and monitoring per regulations in 43 CFR 3809.1-4.

Bench Placer Mine

Bench placer operations can vary in size from one to six persons operating excavators, backhoes, loaders, larger dozers, trommels, vibratory wash plants, draglines, and sluice boxes. Other associated equipment includes water pumps, generators, and conveyors. These operations vary in scope, processing between 10 to 500 loose cubic yards of gravel per day. The average operation of this type processes 50 cubic yards per day, operating 90 days per year.

The mining process could be generalized as follows: vegetation and overburden removal, excavation of bench gravels, hauling of mineral-bearing gravels to processing plant, washing of gravel with water, concentrating heavy metals in sluice box, and replacement of tailings into the excavated area as part of the reclamation plan.

Surface Impacts of Bench Placer Development

It is anticipated that the excavation area for mineral extraction would disturb approximately five acres. The finer material that washes over the sluice box is allowed to settle in settling ponds to prevent siltation of adjacent streams. The water in the pond could be recycled through the wash plant to conserve water; and after the tailings are contoured for reclamation, the soil could be spread over the gravels and reseeded. Other associated activities include the need for support facilities (0.75 acre); road construction for access and ore hauling (approximately 0.75 acre); construction of settling ponds approximately 200 feet by 60 feet by 15 feet deep (0.5 acre total); and water diversion for a wash plant. In extreme cases the streams might be diverted into alternate channels so that the stream channel could be mined following issuance of the necessary state permits. Approximately 0.5 acre would be needed for stockpiling overburden and topsoil to be used during site reclamation. Altogether, it is anticipated that the total disturbed area would involve approximately 7.5 acres for a bench placer mining operation.

Silica Sand Mine

Silica sand operations could vary in size from 3 to 20 persons operating excavators, backhoes, dozers, draglines, magnetic separators, and trucks (or trains) for taking the silica to the processing site. Other associated equipment could also include conveyors and support facilities. These operations could process up to 1,000 cubic yards of sand per day, operating year round.

The mining process could be generalized as follows: vegetation and overburden removal, excavation of dunal sands, transportation of the sand to the magnetic separator, placement of heavy minerals at a waste stockpile site nearby, and transportation of refined silica to the processing plant.

Surface Impacts of Silica Sand Mine Development

The mine excavation area is anticipated to involve the disturbance of about 20 acres. It is anticipated that approximately two acres would be needed to stockpile overburden and heavy minerals extracted from the deposit. Approximately 0.5 acre would be utilized for disposal of vegetation removed from within the mine development area. Approximately one acre would be utilized for the office site and magnetic separation facility. Altogether, approximately 23.5 acres would be impacted by the silica mine development.

Due to the proximity of the groundwater table to the surface, it is assumed that site reclamation could generate a lake or large pond which would be revegetated to benefit wildlife in the area.

Lode Mine

If an economic lode deposit for gold were discovered in the planning area, the following scenario would probably develop.

Mining operations at a hydrothermal gold deposit in the planning area would involve stripping of large amounts of overburden comprised not only of soil, but waste rock. Due to steep terrain, it is expected that the stockpile site for this material would be at a distance where the overburden will have to be hauled by truck and unloaded rather than pushed aside by bulldozer. Drilling, blasting, and crushing the gold ore would be conducted at the site.

Surface Impacts of Lode Mine Development

The mine excavation area is anticipated to involve the disturbance of about 10 acres. It is anticipated that approximately two acres would be needed to stockpile overburden and topsoil near the mined area. Approximately two acres would be needed for support facilities and a staging area, and new haul roads would involve disturbing about two acres. Altogether, approximately 16 acres would be impacted by this lode mine development. Mineral processing is anticipated to be conducted elsewhere due to the steep topography.

Surface Impacts of Lode Exploration

It is anticipated that one Notice would be filed during the plan period pertaining to vein lode exploration and possible development. Exploratory work including drilling, blasting, and bulk sampling would be the emphasis of these projected notice-level operations. Some road and trail construction is anticipated for the operator to access the exploration sites for sample collection.

For that Notice, it is anticipated that three temporary access roads, 200 feet long by 40 feet wide (including cuts, fills, and ditches), would be necessary for equipment to reach the exploration sites. Based upon these calculations, surface disturbance for roads would be approximately 0.5 acre. Support facilities would most likely be needed and would involve the use of about one acre. The mineral sample sites (including three drill sites and two bulk sample sites) would probably disturb about 0.5 acre. No Plans of Operation are anticipated during the life of the Plan, and consequently no lode mine development is expected.

Recreational Mining

Most recreational mining operations on BLM-administered lands in the planning area are anticipated to utilize hand tools or portable suction dredges. Most of the recreational mining operations are expected to be conducted in the recreation area in the Sixes River drainage. Some recreational mining may also occur at the Sixes River Recreational Panning Site or at other locations throughout the district where casual use level mineral specimen collecting has occurred. In situations where either camping (in excess of 14 consecutive days) or the use of motorized equipment is proposed, a Notice would be required of the operator.

In-stream dredging is usually one or two people using a floating suction dredge with a five-to-seven horsepower engine. The dredge pulls up all the gravel in the stream down to bedrock. The gravels are passed over a sluice box and are returned to the stream without the gold. This process does not require any chemicals. Most of the dredges have an intake nozzle opening of less than five inches diameter. In some areas (such as the Sixes River Recreation Area) the intake nozzle is limited to four-inch maximum. The average stream area disturbed in any year is approximately 0.25 acre per dredge operation or about 10,000 square feet, based on operations monitored in the past. Other activities associated with dredging include temporary occupancy, and minor road and trail construction. It is predicted that 30 Notices would be filed for this type of mining activity. These operations would be monitored pursuant to the regulations found in 43 CFR 3809.1-3.

Surface Impacts of Suction Dredging Operations

Approximately 0.15 acre is expected to be disturbed by each in-stream suction dredging operation, and for each operation a camping area approximately 0.1 acre in size would be utilized. Altogether, during the plan period, the 30 anticipated Notices expected to be filed pertaining to these operations would affect a total of 7.5 acres of land.

It is anticipated that hobby mineral collecting and rockhounding would take place on the BLM lands in the operating area, however the surface impacts of those operations are presumed to be negligible since the mineral collectors most often use existing roads and look for surface geologic exposures. Any excavation of specimens is generally conducted with hand tools and is considered casual use.

Salable Mineral Resources

Reasonably Foreseeable Development Scenarios

Future Trends and Assumptions

Projections are that the public would continue to request the use of mineral materials from quarry sites located on the district. When possible, the use of existing sources is preferred; however, new site development is not precluded in this plan.

The quality and quantity of the mineral materials available at a given site are important factors in the decision of whether or not a source is used by either the public or government agencies. The site location and distance to the point of use is another important consideration.

Surface Impacts of Rock Quarry Development

Alternatives NA, A, B, C, and the PRMP

Under any of these five alternatives, five new quarry sites are expected to be developed in the operating area during the plan period. Estimates are that each site would disturb approximately two acres of land. This acreage would be developed for use as a rock crushing operating area, truck turn-around, access trails for bulldozers and drills, overburden stockpile sites, and aggregate stockpile areas. For access to the new quarry site, approximately 0.5 acre of land would be disturbed by new road construction and developed in conjunction with a timber sale contract. Altogether, it is anticipated that approximately 12.5 acres would be impacted by new quarry site development.

The 32 existing quarry sites on the district could be utilized. Six sites could be expanded during the plan period, but the expansions most likely would be less than two acres each.

It is expected that one of the existing quarry sites would be depleted in the operating area during the plan period. After all useable rock is removed, reclamation work would be conducted according to an approved interdisciplinary plan.

Alternatives C, D, and E

It is anticipated that no new quarry sites would be developed during the plan period and that mineral materials would be taken from within the existing quarry site developments around the district. Due to the decreased demand for mineral materials under these alternatives, it is not anticipated that any of the existing sites would be depleted of rock. Also, no site reclamation work is expected to occur during the plan period.

Appendix X. Soil Compaction, Erosion, Nutrient Status, and Biology

Introduction

Soil disturbance is often an unavoidable consequence of many forest management activities, and the district's soils differ in their degree of sensitivity to disturbances. The type and extent of disturbance determines the effects on long-term soil productivity. The timber management practices (including road construction) that create the most disturbances cause compaction and displacement, erosion, and loss of organic materials and nutrients.

Compaction and Displacement

Soil compaction—a process that makes soils more dense—is usually caused by physical pressure and vibration exerted on the soil surface. Compacted soils can have significantly reduced plant growth due to reduced water infiltration and permeability, poor aeration and gas exchange, and lower nutrient exchange. Physical resistance to root growth can also occur with high soil densities. In addition, while compaction may affect populations of soil organisms, its impact on tree growth is unknown.

Soil displacement is the movement or removal of surface soil (topsoil) by mechanical action. Its effect on plant growth depends on both the areal extent and the depth of soil removed. Displacement removes nutrients and soil organisms, and reduces available water and rooting depth. It can affect water infiltration and permeability rates. Soil displacement is different than soil "mixing." Mixing may or may not be detrimental. For example, partial log suspension during yarding can cause considerable surface soil mixing but is a light, shallow type of disturbance that is considered to have little or no negative impact, and in fact may actually promote conifer re-establishment.

Timber harvest and site preparation methods, together with soil conditions during operations, influence the degree of soil compaction and displacement. The yarding system used during harvest affects the amount of soil disturbed. The final amount of soil compaction or displacement created by ground-based yarding primarily depends on areal extent of yarding trails, soil moisture during yarding, number of passes over each trail, and amelioration practices used. The areal extent of detrimental soil compaction or displacement created by ground-based yarding can be minimized by utilizing designated skid trails that are restricted to a predetermined percentage of the harvest unit (Froehlich et. al. 1981, Garland 1982, BLM Compaction Guidelines 1983).

Detrimental soil compaction created by mechanical site preparation can be minimized or avoided by utilizing a tracked backhoe or excavator and limiting the number of passes to two (forward and back) when soils are dry and most resistant to compaction. Tillage can fracture and significantly improve compacted soil. The degree of fracturing depends on the tillage equipment, operator skill, and soil and site conditions including soil texture, moisture, and coarse fragmented content. For example, Andrus and Froehlich (1983) reported fracturing of approximately 80 percent of compacted soils when properly designed winged rippers were used. Likewise, Davis (1990) reported bulk densities of compacted areas tilled with a self-drafting winged subsoiler were not significantly different than those in uncompacted areas. However, soil structure and pores are not returned to their natural condition by tillage. No research has been conducted that correlates the degree of fracturing and restoration of soil density with the restoration of growth potential.

The more a log is suspended during yarding with a cable system, the less the soils are disturbed, thus skyline systems generally disrupt less than high-lead systems (Dyrness 1967). It is unknown how the compaction and displacement that occurs from cable yarding affects tree growth. The amount of soil compaction or displacement and associated tree growth loss created by mechanical site preparation varies with conditions, including soil type, amount of material to be piled, soil moisture, machine type, skill of operator, depth of organic matter layers, and the number of machine passes.

Soil Erosion and Mass Wasting (Landsliding)

Surface erosion and mass wasting are two types of soil erosion that affect the long-term productivity of forest soils. Both are naturally occurring geologic processes involving gravity, soil water, precipitation events, and other factors.

Surface soil erosion includes sheet, rill, gully, and dry ravelling, which results from the detachment and movement of individual soil particles or aggregates downslope. It is caused either by the energy of rainfall and running water acting on bare soils, or by surface disturbance of steep slopes. In some of the higher elevation areas, freezing and thawing—especially on a daily basis—can cause considerable erosion on disturbed ground. This is particularly apparent in road cutbanks and areas with exposed soil.

Mass wasting (landsliding) is the downslope movement of soil and rock material. Volume of mass wasting events can range from a few cubic feet to thousands of cubic yards. Some of the more important factors that contribute to soil/slope instability are steep gradient; low soil strength; declining root strength; shallow soil depth; road construction; and a high frequency, duration, and intensity of precipitation. Current, state-of-the-art road construction practices have dramatically reduced the landslide frequency rate from that of pre-1975 road construction practices.

Several distinct types of mass movement are recognized. Debris avalanches and debris torrents have many similarities. Both occur on steep slopes; are fast moving; and are composed of soil, rock, water, and organic material. The two differ in that torrents are water-charged and occur in drainages, whereas avalanches lack the high water content and may or may not occur in drainages. Torrents and avalanches—the two most dangerous types of landsliding—usually produce the most dramatic onsite and off-site effects. There are also various slow moving types of mass movement such as shallow earth flows, rotational slumps, and deep-seated geologic events; these are usually initiated by excessive water. Major concerns and impacts of mass wasting involve public safety, private property, roads, bridges, water quality, and fisheries (see Chapter 4, Effects on Water Resources and Effects on Fish).

Hi-lead systems may disturb from 15 to 20 percent of the harvested area (Dyrness 1967). Skyline systems generally disturb less than 10 percent of the area, and aerial systems affect less than 5 percent of the ground (Dyrness 1967). Compaction, displacement, and mixing are the primary yarding disturbances. The significance of displacement and mixing of surface soils and organic materials on long-term productivity is unknown.

Reduction in root strength following timber harvest and site preparation activities could possibly be a significant cause of landsliding outside the area of road construction. These changes match the high frequency of landslides the first few years following timber harvest on slopes with high potential for failure in western Oregon (Burroughs and Thomas 1977). There are two types of landsliding: (1) translational, where the slip surface is relatively shallow, planar, and roughly parallel to the ground surface; and (2) rotational, where the slip surface is relatively deep and circular. Areas most sensitive to loss of root strength and subsequent translational-type landsliding usually are steep (70 percent or greater) slopes in concave positions over hard bedrock in areas of high rainfall. Rotational-type landslides are less sensitive to the root strength factor, but are sensitive to disturbances to soil and ground water and to natural slope configuration.

Nutrient Status

Soil organic matter accumulation and cycling are related to site index. When compared to lower site indices, higher sites have more organic matter incorporated into the soil and a larger nitrogen pool which makes their productivity usually more resilient. Conservation of organic matter is more important on low sites than on high sites for the maintenance of long-term productivity.

Harvest and site preparation intensities and frequencies influence the amount and composition of the surface organic layer. Conservation of small materials (e.g., needles, leaves, and twigs) is important to total site nitrogen because these materials have the highest concentrations of nitrogen. When compared to needles and twigs, removal of large materials (e.g., stemwood and large branches) has less effect on total site nitrogen. However, the large materials are important for continuation of healthy symbiotic fungi populations (Maser et al. 1978).

Soil Biology

Soil organisms work continually in carbon cycling, nutrient transfer, water availability, vegetation vigor, and maintenance of soil structure (Power 1989). Mycorrhizal fungi enhance nutrient uptake of host plants by increasing the absorbing area of roots through active physiological mechanisms (Amaranthus et al. 1989). When populations of soil organisms are healthy, few nutrients (e.g., nitrates) leach out of the system. The increased surface-absorbing area also directly increases the total soil volume that roots can explore for water. Soil organisms are responsible for most biological fixation of nitrogen in ecosystems. Certain bacteria and actinomycetes form a mutually beneficial relationship with host plants and convert (symbiotic fixation) atmospheric nitrogen into ammonium nitrogen which is released into the host plant's roots (Amaranthus et al. 1989). Specifically, red alder and associated bacteria (in the form of root nodules) can produce considerable amounts of nitrogen. Also, certain organisms that are not associated with host plants can convert atmospheric nitrogen (asymbiotic fixation). Some of these organisms are associated with wood-rotting fungi and mycorrhizal fungi (Amaranthus et al. 1989).

Mycorrhizae and other microbes affect soil structure by helping bind soil particles into water-stable aggregates with stable and adequate pore space. Soil pores are essential for adequate movement of water and air required by plant roots and soil organisms.

While available data is not complete enough to address what causes reductions in beneficial organism populations nor how reduced populations affect soil productivity, recent studies provide evidence for reasonable speculation. These studies suggest that long-term impacts to soil organisms can be reduced by implementing management practices that minimize soil disturbance severity, maintain soil organic matter levels, and emphasize revegetation by indigenous host species and associate soil organisms (Amaranthus et al. 1989).

FORCYTE-11 Model

The Coos Bay District used the FORCYTE-11 model developed by Dr. J.P. Kimmins and K.A. Scoullar through the University of British Columbia in the 1980s. The model—a hybrid historical bioassay and ecological process-based computer simulation—predicts forest yields under different management scenarios. It is a "nutrient driven" model designed to examine the effects of altering the nutrient status of a site. FORCYTE-11 can simulate the growth, yield, and nutrient cycling in a wide variety of forests, but it was not calibrated for multi-storied stands as in the PRMP.

The district has used FORCYTE-11 to estimate long-term productivity trends for various management practices addressed in the "Sensitivity Analysis of Timber Management Prescriptions of the Preferred Alternative." The trends developed are used only for relative comparisons because the model has not been validated against long-term experimental data.

The Oregon State University's Department of Forest Science used a combination of literature and inventory data to calibrate FORCYTE-11 for moist forest soils of western Oregon Douglas-fir sites. These data do not give a complete representation of all ecosystem processes but are the best presently available. Because research indicates that nitrogen is the limiting factor for most sites growing Douglas-fir in western Oregon, nitrogen was the limiting nutrient used in the FORCYTE-11 simulations. Vegetative growth in FORCYTE-11 is strongly influenced by available nitrogen.

FORCYTE-11 was used to estimate Douglas-fir total biomass production and site quality at an inherent, natural productivity level. This required three major steps:

1. An "initial ecostate" was developed which consisted of running several long rotations to a total of 900 years. Also, several light underburns and stand replacement burns were used to simulate natural conditions.

2. Next, a "baseline" production was determined. After the initial ecostate was developed, a series of eight 70-year (CMAI) rotations were run with no management applied. The production, in metric tons per hectare, was read directly from tables and graphs produced by the model. The average production per hectare per year was then calculated and used as the "baseline" number against which all future simulations would be compared.

3. Finally, various management prescriptions, based on the planning alternatives, were run as simulations in FORCYTE-11. The results, in metric tons per hectare per year, of each simulation were then compared to the baseline. The percent difference between the baseline and a simulation was reported as a trend—maintaining, increasing, or decreasing.

The following procedures were used for estimating nitrogen-related growth effects due to various management prescriptions.

1. The estimate of total Douglas-fir biomass for the inherent productivity of a natural stand growing until CMAI was converted to mean annual production.

   Example: 5,234 metric tons (MT) per hectare (Ha), divided by four 70-year rotations (280 years).

   5,234 divided by 280 = 18.7 MT/Ha/Yr (baseline mean annual production)

2. FORCYTE-11 was used to estimate Douglas-fir total biomass produced by various management prescriptions. Total biomass figures were reported as mean annual production in metric tons per hectare.

   Example: Management prescription of three 80-year rotations with a light burn and precommercial thinning at 12 years.

   5,044 MT per Ha, produced over three 80-year rotations (240 years).

   5,044 divided by 240 = 21.0 MT/Ha/Yr. (mean annual production)

3. The mean annual production estimates were used to calculate percent change from the baseline (natural productivity) for the various timber management prescription simulations.

   Example: 21.0 (mean annual production), minus 18.7 (baseline), multiplied by 100, and divided by 18.7 (baseline) equals 12.3 percent.

4. The degree and direction of the productivity trend for each timber management prescription simulated was estimated by using the percent change from the mean annual production and the annual production from the last simulated rotation.

   Example: 19.1 (annual production of last rotation), minus 21.0 (mean annual production), multiplied by 100, and divided by 21.0 (mean annual production) equals a negative 9.0 percent.

5. The percent change from baseline productivity for each management prescription, and the percent change in the last rotation compared to the mean of the total evaluation time for that management prescription, were put into the following trend classes:

   Maintaining: Change is + or - <10%
   Increasing: Change is + 11 to 20%
   Decreasing: Change is - 11 to 20%
   Strongly Increasing: Change is greater than + 21%
   Strongly Decreasing: Change is greater than - 21%

Table X-1 shows the long-term productivity trend classes for various timber management prescriptions, including some that would be used in the alternatives.

Table X-1. FORCYTE - 11 Long-Term Soil Productivity Trends

					No Burn		Light Burn		Moderate Burn	
Case Number	Management Prescriptions	Rotation Length (years)	No. of Rotations	Evaluation Time (years)	Productivity -vs- Baseline	Productivity -vs- Last Rotation	Productivity -vs- Baseline	Productivity -vs- Last Rotation	Productivity -vs- Baseline	Productivity -vs- Last Rotation
1	No Treatment, High Stocking	80	6	480	Increasing	Maintaining	Maintaining	Decreasing	Maintaining	Decreasing
2	No Treatment, Low Stocking	100	6	600	Strongly Decreasing	Maintaining	Strongly Decreasing	Decreasing	Strongly Decreasing	Strongly Decreasing
3	PCT Only, CMAI	80	6	480	Increasing	Maintaining	Maintaining	Decreasing	Decreasing	Strongly Decreasing
4	PCT Only	150	4	600	Maintaining	Maintaining	Maintaining	Maintaining	Maintaining	Decreasing
5	1 Fertilization, CMAI	90	6	540	Increasing	Maintaining	Maintaining	Maintaining	Maintaining	Decreasing
6	1 Fertilization	150	4	600	Increasing	Maintaining	Maintaining	Maintaining	Maintaining	Maintaining
7	3 Fertilizations	150	4	600	Increasing	Maintaining	Increasing	Maintaining	Maintaining	Maintaining
8	3 Fertilizations, CMAI	90	6	540	Strongly Increasing	Maintaining	Strongly Increasing	Maintaining	Increasing	Maintaining
9	PCT, 2 CT	80	6	480	Maintaining	Maintaining	Maintaining	Strongly Decreasing	Decreasing	Strongly Decreasing
10	PCT, 1 CT, CMAI	80	6	480	Increasing	Maintaining	Maintaining	Decreasing	Decreasing	Strongly Decreasing
11	PCT, 3 Fertilizations, CMAI	70	8	560	Strongly Increasing	Maintaining	Increasing	Maintaining	Maintaining	Decreasing
12	PCT, 3 Fertilizations, 1 CT, CMAI	70	8	560	Strongly Increasing	Maintaining	Increasing	Maintaining	Maintaining	Decreasing
13	Max. Timber, D & E with Debris Retention	70	8	560	Maintaining	Maintaining	Increasing	Maintaining	Maintaining	Decreasing

Table X-1. FORCYTE - 11 Long-Term Soil Productivity Trends (continued)

					No Burn		Light Burn		Moderate Burn	
Case Number	Management Prescriptions	Rotation Length (years)	No. of Rotations	Evaluation Time (years)	Productivity -vs- Baseline	Productivity -vs- Last Rotation	Productivity -vs- Baseline	Productivity -vs- Last Rotation	Productivity -vs- Baseline	Productivity -vs- Last Rotation
14	Max. Timber @ 12" dbh	40	14	560	Decreasing	Maintaining	Strongly Decreasing	Decreasing	Strongly Decreasing	Strongly Decreasing
15	Max. Timber @ 16" dbh	60	10	600	Increasing	Maintaining	Maintaining	Maintaining	Maintaining	Decreasing
16	Max. Timber @ 20" dbh	100	6	600	Increasing	Maintaining	Maintaining	Maintaining	Maintaining	Decreasing
17	Max. Timber @ 24" dbh	180	2	360	Maintaining	Maintaining	Maintaining	Maintaining	Maintaining	Maintaining
18	PCT, 2 CT	300	2	600	Decreasing	Maintaining	Decreasing	Maintaining	Decreasing	Maintaining
19	PCT, 2 Fertilizations, 2 CT	150	4	600	———	———	Maintaining	Maintaining	———	———
20	PCT, 2 Fertilizations, 2 CT	300	2	600	———	———	Maintaining	Maintaining	———	———

The percent change from the baseline level or last rotation for each management prescription was categorized into the following trend classes:

Maintaining: Change is + or = <10%
Increasing: Change is +11 - 20%
Decreasing: Change is - 11 - 20%
Strongly Increasing: Change is + >21%
Strongly Decreasing: Change is - >21%

[1] Proposed Action prescriptions on intensively managed areas, corridor management areas, and old-growth management areas, respectively.

Appendix Y. Assessing Effects on Wildlife - Analytical Techniques

What assessment method will be used to determine how the RMP alternatives would impact important wildlife habitats and populations?

Roosevelt Elk

Subquestion I. What method should be used to analyze impacts on Roosevelt elk habitat and populations? How should the selected model be used to analyze alternatives?

Two approaches (Wisdom Model and Cover/Forage Ratio) were considered in the 1988 Proposed State Director Guidance. The preferred method is the Wisdom Model which has been accepted for application to forest-wide planning by an interagency task force including the U.S. Forest Service, BLM, Oregon Department of Fish and Wildlife, and the Washington Department of Wildlife. The task force developed guidelines for using and fine-tuning the model. BLM computed values for three habitat effectiveness indices rather than compute a geometric mean as used in the Wisdom Model. The basis for this difference is that the geometric mean has been criticized for its tendency to give a narrow range of habitat effectiveness values. In addition, analytical techniques presented in this appendix have more detail than the 1988 proposal as a result of knowledge gained while testing the technique.

Assessment Method

Wisdom et al., *A Model to Evaluate Elk Habitat in Western Oregon.*

Assumptions/Comments

a) Vegetation data on adjacent private lands are adequate to assess cumulative effects.

b) Evaluations will be conducted for each analytical watershed or elk management area with substantial existing or potential elk use where BLM has at least 25 percent management control. Watersheds with less than 25 percent BLM management control may be analyzed if BLM-administered land is important to elk management.

c) See Wisdom et al. (p. 11) for a complete list of assumptions pertinent to use of the model.

d) Use the following forest stages as a guide (ages for each category are typical and may vary due to differences in forest types and management regimes):

Forage areas = 0 to 20 years

Hiding cover = 21 to 50 years with appropriate stocking classes

Thermal cover = 51 to 160 years with appropriate stocking classes

Optimal cover = Over 160 years with appropriate stocking classes

Analytical Techniques

a) Divide the land base into analytical watersheds (GIS Map AWS), or elk management areas (ARD Map M69), using 30,000 to 50,000 acres as a guide.

b) Integrate information from the FOI theme for forest operations inventory on BLM-administered land, and from Gross Vegetation theme for non-BLM-administered land to calculate effectiveness indices.

c) Refer to Wisdom et al. publication for details on use of the model (p. 23-31). In summary, the technique involves calculation of three habitat effectiveness indices including density of roads open to motorized vehicles, cover quality, and forage quality.

d) Calculation of Road Density Index (HEr):

   1) Overlay Transportation theme (TRB) and Analytical Watershed (AWS) theme. Use the LPOVER and Length commands in MOSS to determine road length. Divide road length by area to get road density.

e) Calculation of Cover Quality Index (HEc):

   1) Use HEC attribute in MICRO*STORMS to determine acres of hiding, thermal, and optimal cover by quality classes (see assumption “d” above).

   2) Use the heavy timber subject (VHT) on the Gross Vegetation theme (consider VHT to include closed canopy stands) to estimate acreages of hiding, thermal, and optimal thermal areas on non-BLM-administered land. Consult with the U.S. Forest Service and private industry personnel on these estimates. To estimate additional acres of hiding cover on non-BLM-administered land, use the following subjects from the Gross Vegetation theme: VSG (second growth), VB (brush) and 0.5 VST (scattered trees).

f) Calculation of Forage Quality Index (HEf):

   1) Use the HEf attribute in MICRO*STORMS to determine acres of forage by quality classes as described in Wisdom Model (p. 29).

g) For analysis, trends for the three habitat indices were estimated for BLM-administered land only because predictions would be too speculative for private land. To estimate HEc, HEf and HEs indices, use output from ASQ runs. The HEc index can be derived directly from age-class distributions derived from ASQ runs. The HEf index can be estimated by projecting the amount of clearcutting in the future and consulting with forestry staff on expected trends in forage seeding, burning, and fertilization. The HEr index can be estimated by reviewing development of the 10-year timber management scenarios.

h) In a narrative, discuss long-term cumulative effects.

Display Techniques

a) Display calculated habitat values for each analytical watershed or elk management area in tabular form.

Snags

Subquestion II. What method should be used to predict the number of snags that would be available for each alternative, and how does this relate to changes in population levels of cavity-users?

Two methods were considered in the 1988 Proposed State Director Guidance (optional methods 1 and 2). Since results from the two methods were roughly equivalent, only the first option was retained. An additional change was to drop reference to management for 20 percent of the potential population levels of dominant woodpeckers (e.g., downy woodpecker, hairy woodpecker, red-breasted sapsucker, pileated woodpecker, and northern flicker) in clearcuts.

Assessment Method

Neitro et al. method to analyze multiple species snag requirements (described in *Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington* edited by E. Reade Brown, 1985).

Assumptions

a) By managing for dominant woodpeckers, requirements of other cavity-users would be fulfilled.

b) There is a direct correlation between snag densities and population densities of cavity-users.

c) The following minimum guidelines have been established for most alternatives (except alternatives where minimum standards of Oregon Forest Practices Act rules apply):

- Wildlife trees will be greater than 10 inches dbh and at least 20 feet tall; no more than five percent of the trees left will be under 15 inches dbh, at least five percent of the trees left will be over 30 inches dbh, and the remainder will be over 15 inches dbh.

- All soft snags will be left except where unacceptable for safety, logging systems, or burning considerations.

- Hard snags will be left (or green trees if needed) for snag mitigation purposes, to provide the current needs of hard-snag-dependent species and also to serve as a source of future soft snags.

- Hard snags will be distributed according to the following criteria: In harvest units, retain the number of hard snags or green trees to support the desired population of dominant woodpeckers (either individually scattered, or in clumps larger than two acres); retain all hard snags in areas not available for timber harvest (e.g., nonsuitable woodland, protected old-growth/spotted owl, riparian, bald eagle).

Analytical Techniques

a) Estimate existing snag levels for each forest age class. These snag levels may be estimated from projections of snag densities currently being measured on timber inventory plots (or by using other data already collected including snag data from literature sources). Snag densities are presently being determined for the following conifer age classes: 1 to 30, 40 to 80, 90 to 190, and over 200. Hardwood stands are also being measured. See BLM's *Forest Inventory Field Instructions for Western Oregon* for further details. Snag densities for other habitats, such as nonsuitable woodlands and riparian management areas (RMA), may be estimated from timber inventory plots (or by use of other data if available) if age classes are known.

b) Estimate snag densities for each age class for the range of alternatives after evaluating the strategy of each alternative to provide habitat for cavity dwellers.

c) Convert calculated snag densities into district-wide estimates of potential population levels (percent of maximum population levels) of dominant woodpeckers for each alternative (see Neitro et al., p. 145).

d) Conduct analysis for both the short term and long term (100 years).

e) In a narrative, discuss cumulative effects of the alternatives on cavity-users.

Display Technique

a) Display estimated population levels of dominant woodpeckers at the end of 10 years and the end of 100 years.

For a discussion of analytical techniques used in assessing dead-and-down woody material, see Appendix IV-F in the draft RMP.

Appendix Z. Probable Management Activities and Major Consequences in Existing and Potential Special Areas

Special Area	Alternative	Probable Management Activities/ Major Consequences
Existing		
New River ACEC	NA-PRMP	Under all alternatives, New River would continue to be protected as an ACEC, with controls on OHV use, grazing, and spread of exotic species. Consequence: Special status plant and animal habitats, and cultural values would be protected, as would interpretive recreational, wildlife viewing, and nature study opportunities.
Cherry Creek RNA	NA-PRMP	Under all alternatives, Cherry Creek would continue to be protected as an RNA. Consequence: Special status plant and animal habitat would be protected. Recreational development would be precluded.
Powers Environmental Education Area	NA	No resource development activities due to continued use as an environmental education area. Consequence: Some possible damage due to availability for limited OHV use.
	A	No special protective designation so the area is available for resource development. Consequence: Area may be harvested, resulting in loss of mid-age/old-growth timber stand adjacent to community of Powers, and educational opportunities.
	B	No resource development activities or OHV use because of management as a retention block for habitat diversity corridor. Consequence: Plant and animal habitat would be protected, as would educational value.
	C, D ,E, PRMP	No resource development activities or OHV use because of continued designation as an environmental education area. Consequence: Plant and animal habitat would be protected, as would educational opportunities.

Special Area	Alternative	Probable Management Activities/ Major Consequences
Potential		
Wassen Creek	NA, A	1,290 acres of timber harvest and 4.8 miles of RNA/ACEC road construction are included in the 10-year scenario. Consequence: Disturbance of natural conditions would result in loss of ability to fill five RNA cells, and conduct associated research projects.
	B	890 acres of timber harvest and 4.3 miles of road construction are included in the 10-year scenario. Consequence: While some portions would be managed as retention blocks for the habitat diversity corridor, the overall effect would be the loss of ability to fill five RNA cells, and conduct associated research projects.
	C, D	Area would be designated as an RNA/ACEC. Consequence: Five RNA cells would be filled. Special status plant and animal habitat would be protected. Recreation development would be precluded.
	E, PRMP	Area would be designated as an ACEC. Consequence: Special status plant and animal habitat would be protected. Ability to conduct research in a totally undisturbed environment would be reduced. Recreational, interpretive, educational, and nature study opportunity would be increased.
North Fork Coquille River ACEC	NA, A	160 acres of timber harvest and 0.3 miles of road construction are included in the 10-year scenario. Consequence: Timber harvest/road construction could affect spawning habitat for coho salmon.
	B, C	140 acres of timber harvest and 0.3 miles of road construction are included in the 10-year scenario. Consequence: Timber harvest/road construction could affect spawning habitat for coho salmon.
	D, E, PRMP	Area would be designated as an ACEC. Consequence: Special status plant and animal habitat would be protected. Opportunity for recreational trail construction, interpretation, and recreational nature study.

Special Area	Alternative	Probable Management Activities/ Major Consequences
China Wall ACEC	NA, A	100 acres of timber harvest and 0.3 miles of road construction are included in the 10-year scenario. Consequence: Possible loss of some special status plant and animal habitat, and cultural values.
	B, C	Part of area in intensive harvest base, although no harvest planned for next decade. The non-commercial forested portion would be designated as an ACEC. Consequence: Special status plant and animal habitat, cultural and historic values would be protected. Some possible future loss of special status plant and animal habitat and cultural values.
	D, E, PRMP	Area would be designated as an ACEC. Consequence: Special status plant and animal habitat would be protected as would cultural, historic, and interpretive recreational or nature study values.
Tioga Creek ACEC	NA, A, B, C	20 acres of timber harvest included in the 10-year scenario. Consequence: Some possible damage to old-growth dominated riparian zone.
	D, E, PRMP	Area would be designated as an ACEC. Consequence: Plant and animal habitat would be protected, as would interpretive recreational, or nature study opportunities.
North Spit ACEC	NA, A	Area would remain open to OHV use and mineral entry. Consequence: Some possible loss of special status plant and animal habitat, cultural and historic values.
	B, C, D, E, PRMP	Area would be designated as an ACEC and withdrawn from mineral entry. Consequence: Special status plant and animal habitat would be protected, as would cultural, historic, recreational and interpretive or nature study values.
Upper Rock Creek RNA/ACEC	NA	Protected as ecosystem diversity block.
	A	300 acres of timber harvest and 0.4 miles of road construction are included in the 10-year scenario. Consequence: Disturbance of natural conditions would result in loss of ability to fill 1 RNA cell.

Special Area	Alternative	Probable Management Activities/ Major Consequences
	B, C	Although area not designated as an RNA/ACEC, it would be protected through designation as a habitat diversity block. Consequence: Plant and animal habitat would be protected.
	D	Area would be designated as an RNA/ACEC. Consequence: Special status plant and animal habitat would be protected, and one RNA cell filled. Recreation development would be precluded.
	E, PRMP	Area would be designated as an ACEC. Consequence: Special status plant and animal habitat would be protected, as would recreational and interpretive or nature study opportunities.
North Fork Hunter Creek RNA/ACEC	NA, A	680 acres of timber harvest and 7.3 miles of road in the 10-year scenario. Consequence: Possible loss of special status plant and animal habitat, ability to fill one RNA cell, and some cultural/historic values.
	B, C, D	Area would be designated as RNA/ACEC. Consequences: Special status plants and animal habitat would be protected. Cultural/historic values protected. Recreation development would be precluded.
	E, PRMP	Area would be designated as an ACEC. Consequence: Special status plant and animal habitat would be protected. Cultural/historic values and recreational opportunities protected. Reduced research opportunities in a totally undisturbed environment.
Hunter Creek Bog RNA/ACEC	NA, A	20 acres of timber harvest and 0.2 miles of road construction are included in the 10-year scenario. Mineral activity permitted without approved plan of action. Consequence: Possible loss of special status plant and animal habitat, and inability to fill two RNA cells.
	B, C, D	Area would be designated as an RNA/ACEC. Consequence: Two RNA cells would be filled, and special status plant and animal habitat would be protected. Recreation development would be precluded, and mineral development restricted.

Special Area	Alternative	Probable Management Activities/ Major Consequences
	E, PRMP	Area would be designated as an ACEC. Consequence: Special status plant and animal habitat would be protected, as would interpretive recreational or nature study opportunities. Mineral development would be restricted, and research opportunities reduced.
North Fork Chetco River RNA/ACEC	NA, A, B	130 acres of timber harvest and 1.1 miles of road construction are included in the 10-year scenario. Consequence: Disturbance of natural conditions would result in loss of ability to fill two RNA cells. Possible loss of some cultural values.
	C, D	Area would be designated as an RNA/ACEC. Consequence: Two RNA cells would be filled, and plant and animal habitat would be protected. Cultural values protected.
	E, PRMP	Area would be designated as an ACEC. Consequence: Plant and animal habitat, cultural, and interpretive recreational opportunities would be protected.

Appendix AA. Acres Harvested by Age Class by Decade

Table AA-1. No Action (NA) Alternative (ASQ 254 MMBF)

Final Harvest

	Decade				
Age	1	2	3	5	10
30-39					
40-49		8,000	36,400	29,400	
50-59		9,400	7,900		
60-79		18,400			15,200
80-99		7,900			
100-199	19,000	14,800			200
200+	18,300	200	200	200	
Total	37,300	58,700	44,500	29,600	15,400

Thinning/Density Management

	Decade				
Age	1	2	3	5	10
30-39	7,300	27,200	40,800	30,700	23,500
40-49		6,200		16,000	26,900
50-59					31,900
60-79					53,700
80-99					
100-199					
200+					
Total	7,300	33,400	40,800	46,700	136,000

Total Acres (Final Harvest & Thinning)

	Decade				
Age	1	2	3	5	10
30-39	7,300	27,200	40,800	30,700	23,500
40-49		14,200	36,400	45,400	26,900
50-59		9,400	7,900		31,900
60-79		18,400			68,900
80-99		7,900			
100-199	19,000	14,800			200
200+	18,300	200	200	200	
Total	44,600	92,100	85,300	76,300	151,400

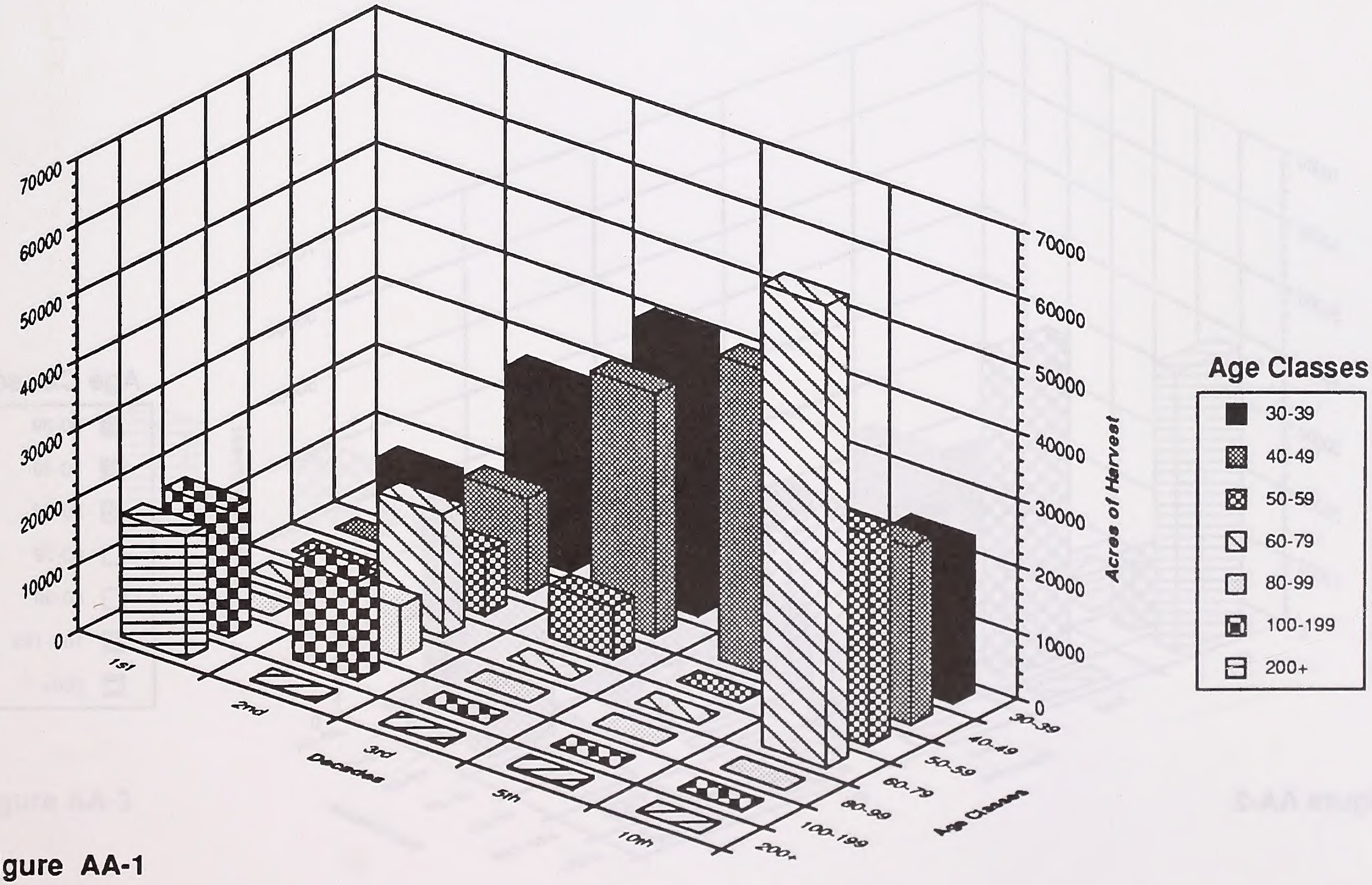

Figure AA-1

Table AA-2. Alternative A (ASQ 294 MMBF)

Final Harvest					
	Decade				
Age	1	2	3	5	10
30-39					
40-49					15,700
50-59			21,600	30,000	26,200
60-79			21,800	6,600	
80-99		4,200	7,600		
100-199	9,700	47,300			
200+	41,700				
Total	51,400	51,500	51,000	36,600	41,900

Thinning/Density Management					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	12,500				17,900
50-59					
60-79					
80-99					
100-199					
200+					
Total	12,500	0	0	0	17,900

Total Acres (Final Harvest & Thinning)					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	12,500				33,600
50-59			21,600	30,000	26,200
60-79			21,800	6,600	
80-99		4,200	7,600		
100-199	9,700	47,300			
200+	41,700				
Total	63,900	51,600	51,000	36,600	59,800

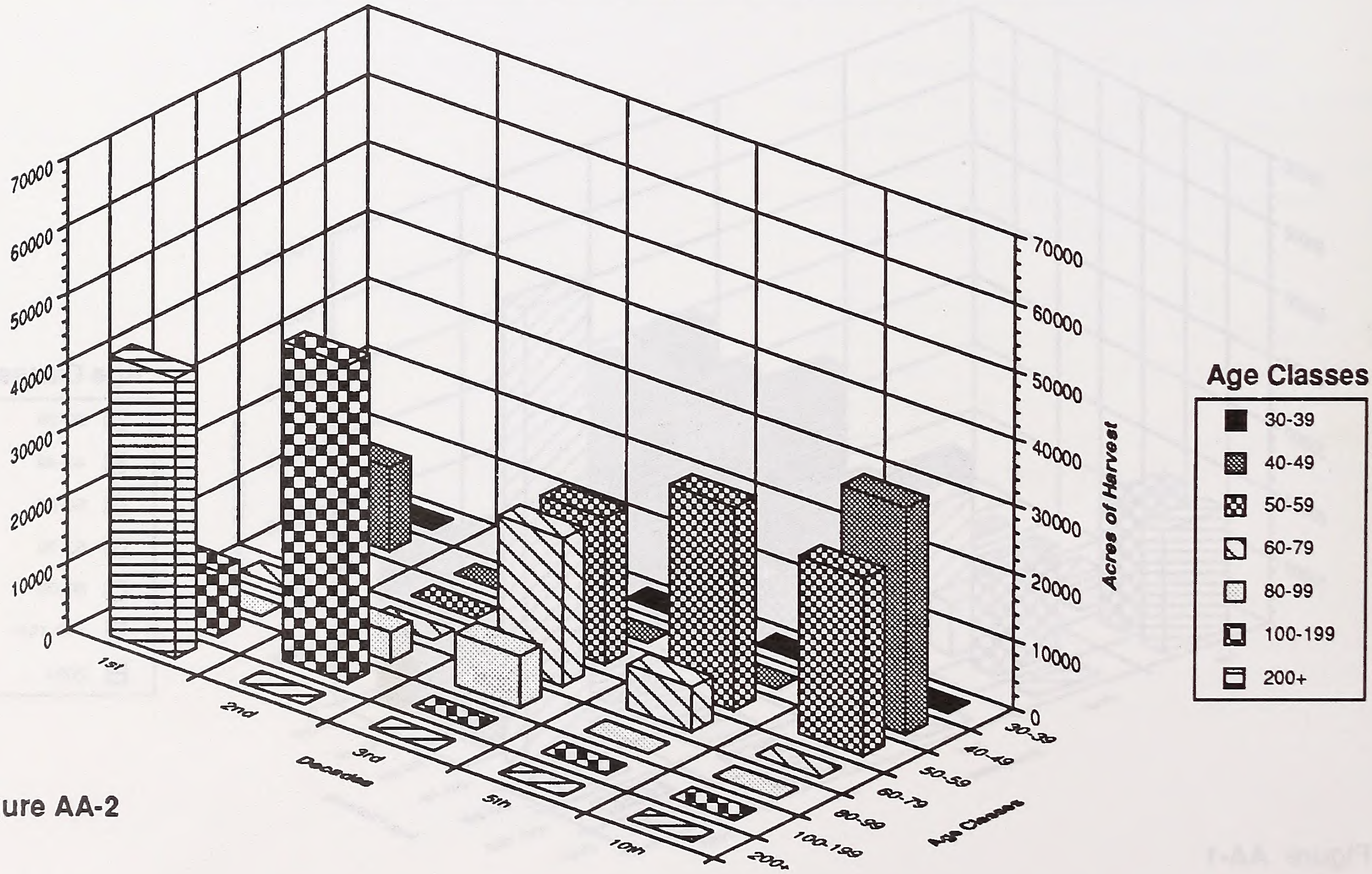

Figure AA-2

Table AA-3. Alternative B (ASQ 267 MMBF)

Final Harvest

	Decade				
Age	1	2	3	5	10
30-39					4,000
40-49			6,800	9,400	39,600
50-59			22,200	30,300	3,300
60-79		11,700	14,000	1,800	
80-99		5,500			
100-199	17,600	30,400			
200+	32,400				
Total	50,000	47,600	43,000	41,500	46,900

Thinning/Density Management

	Decade				
Age	1	2	3	5	10
30-39					
40-49	4,600				
50-59					
60-79					
80-99					
100-199					
200+					
Total	4,600	0	0	0	0

Total Acres (Final Harvest & Thinning)

	Decade				
Age	1	2	3	5	10
30-39					4,000
40-49	4,600		6,800	9,400	39,600
50-59			22,200	30,300	3,300
60-79		11,700	14,000	1,800	
80-99		5,500			
100-199	17,600	30,400			
200+	32,400				
Total	54,600	47,600	43,000	41,500	46,900

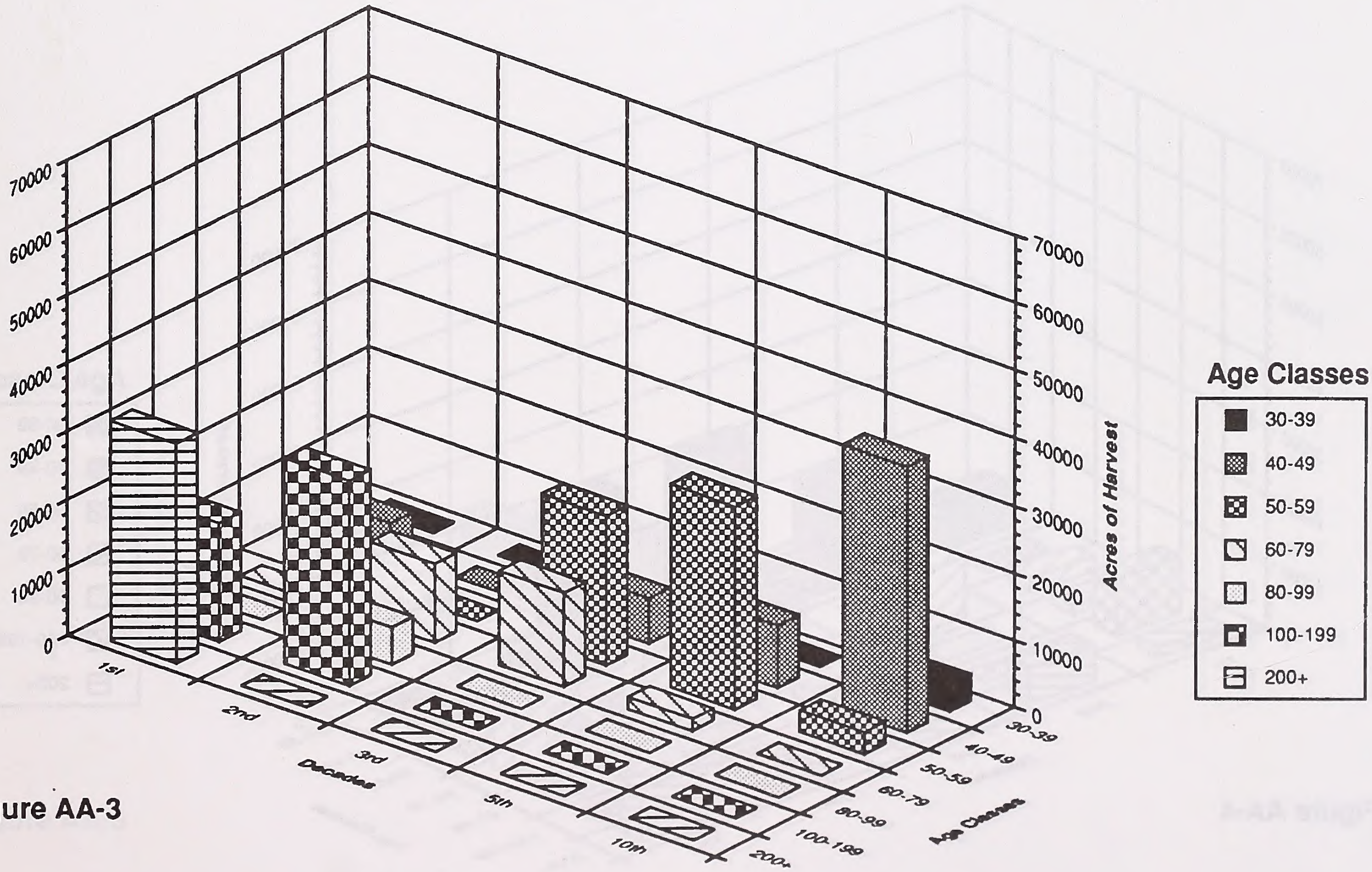

Figure AA-3

Table AA-4. Alternative C (ASQ 86 MMBF)

Final Harvest					
	Decade				
Age	1	2	3	5	10
30-39					
40-49					
50-59					
60-79	2,200	8,800			900
80-99	1,400		2,500		
100-199	8,300		5,700		
200+	1,500	5,300			7,800
Total	13,400	14,100	8,200	0	8,700

Thinning/Density Management					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	7,000	16,800	27,400	26,500	1,400
50-59					
60-79				15,100	11,000
80-99					
100-199					
200+					
Total	7,000	16,800	27,400	41,600	12,400

Total Acres (Final Harvest & Thinning)					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	7,000	16,800	27,400	26,500	1,400
50-59					
60-79	2,200	8,800		15,100	11,900
80-99	1,400		2,500		
100-199	8,400		5,700		
200+	1,500	5,300			7,800
Total	20,500	30,900	35,600	41,600	21,100

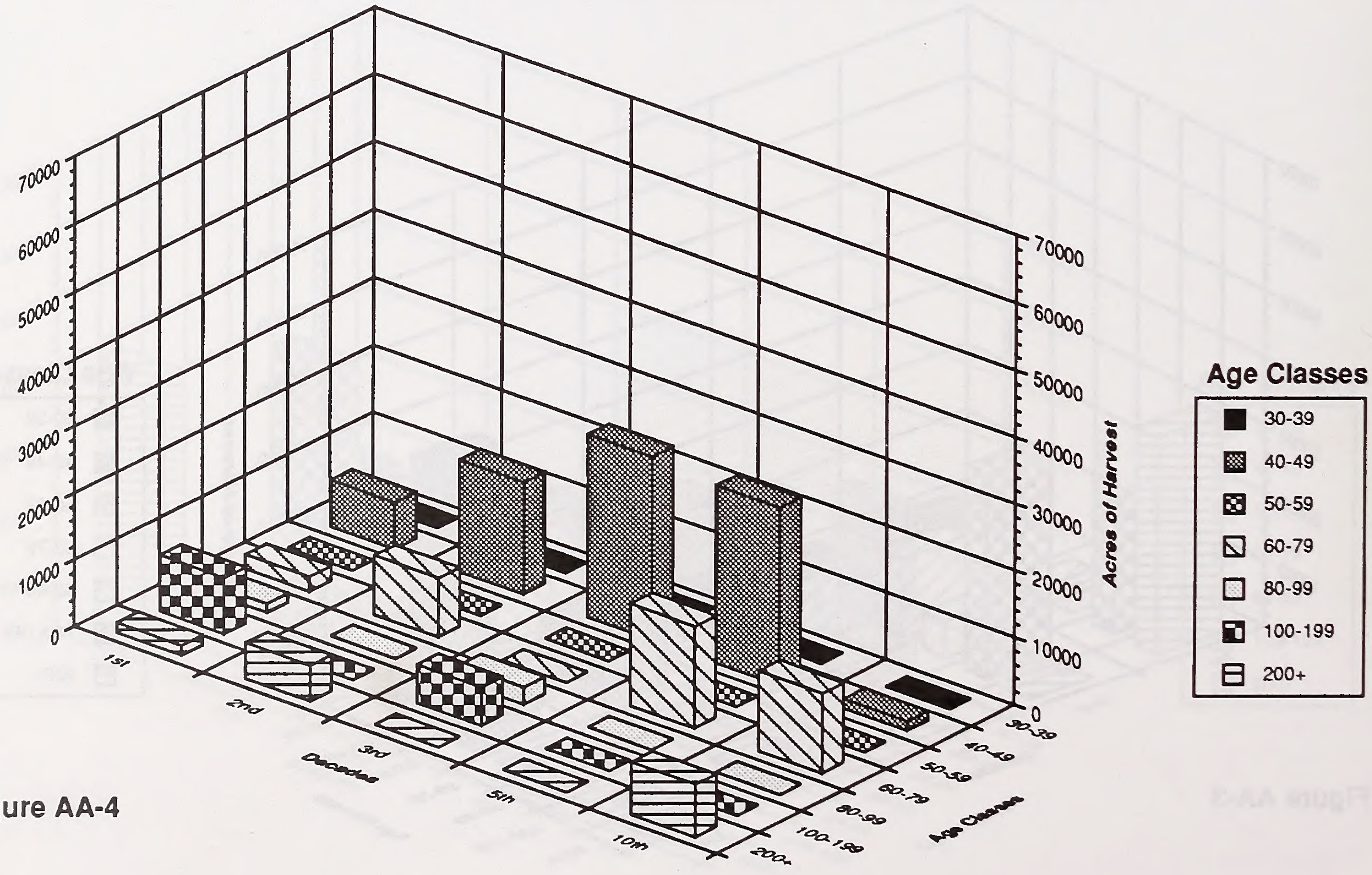

Figure AA-4

Table AA-5. Alternative D (ASQ 76 MMBF)

Final Harvest					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	100	600	1,300	700	1,600
50-59	900	400	1,900	1,300	2,500
60-79	1,000	2,200	3,500	10,900	12,000
80-99	500	400	1,300	4,200	7,300
100-199	7,000	5,500	6,400	6,900	500
200+	2,000	2,800	4,200	300	
Total	11,500	11,900	18,600	24,300	23,900

Thinning/Density Management					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	3,700	9,400	13,400	12,600	12,700
50-59	6,600				
60-79					
80-99					
100-199					
200+					
Total	10,300	9,400	13,400	12,600	12,700

Total Acres (Final Harvest & Thinning)					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	3,800	10,000	14,700	13,300	14,300
50-59	7,500	400	1,900	1,300	2,500
60-79	1,000	2,200	3,500	10,900	12,000
80-99	500	400	1,300	4,200	7,300
100-199	7,000	5,500	6,400	6,900	500
200+	2,000	2,800	4,200	300	
Total	21,800	21,300	32,000	36,900	36,600

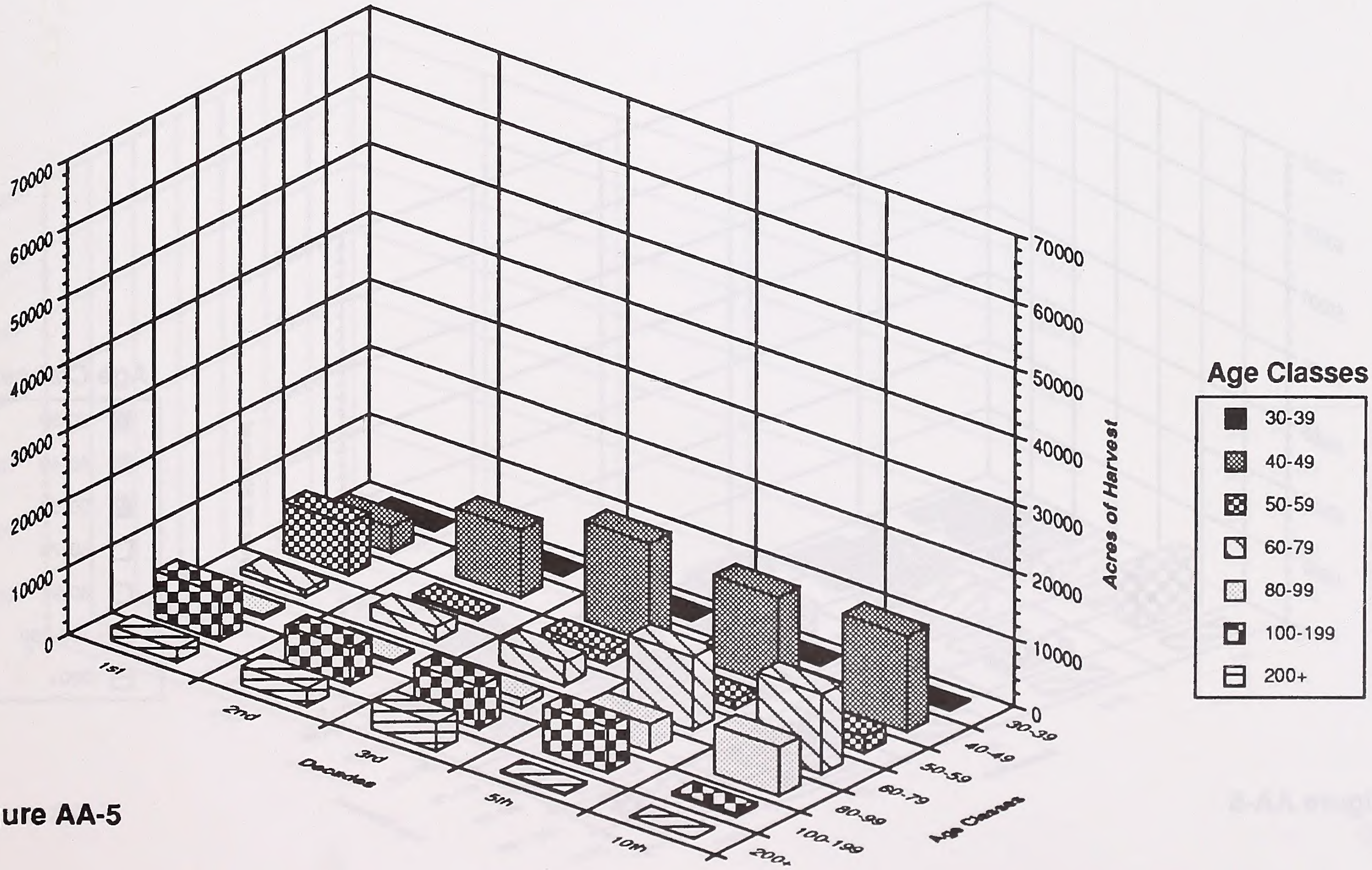

Figure AA-5

Table AA-6. Alternative E (ASQ 65 MMBF)

Final Harvest					
	Decade				
Age	1	2	3	5	10
30-39					
40-49		4,100	8,300	7,400	4,600
50-59	600	4,300	5,100	3,600	3,700
60-79	3,000	4,500			
80-99	1,000				
100-199	8,000	1,500	1,500	1,500	1,500
200+					
Total	12,600	14,400	14,900	12,500	9,800

Thinning/Density Management					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	2,100				7,100
50-59					
60-79					
80-99					
100-199					
200+					
Total	2,100	0	0	0	7,100

Total Acres (Final Harvest & Thinning)					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	2,100	4,100	8,300	7,400	11,700
50-59	600	4,300	5,100	3,600	3,700
60-79	3,000	4,500			
80-99	1,000				
100-199	8,000	1,500	1,500	1,500	1,500
200+					
Total	14,700	14,400	14,900	12,500	16,900

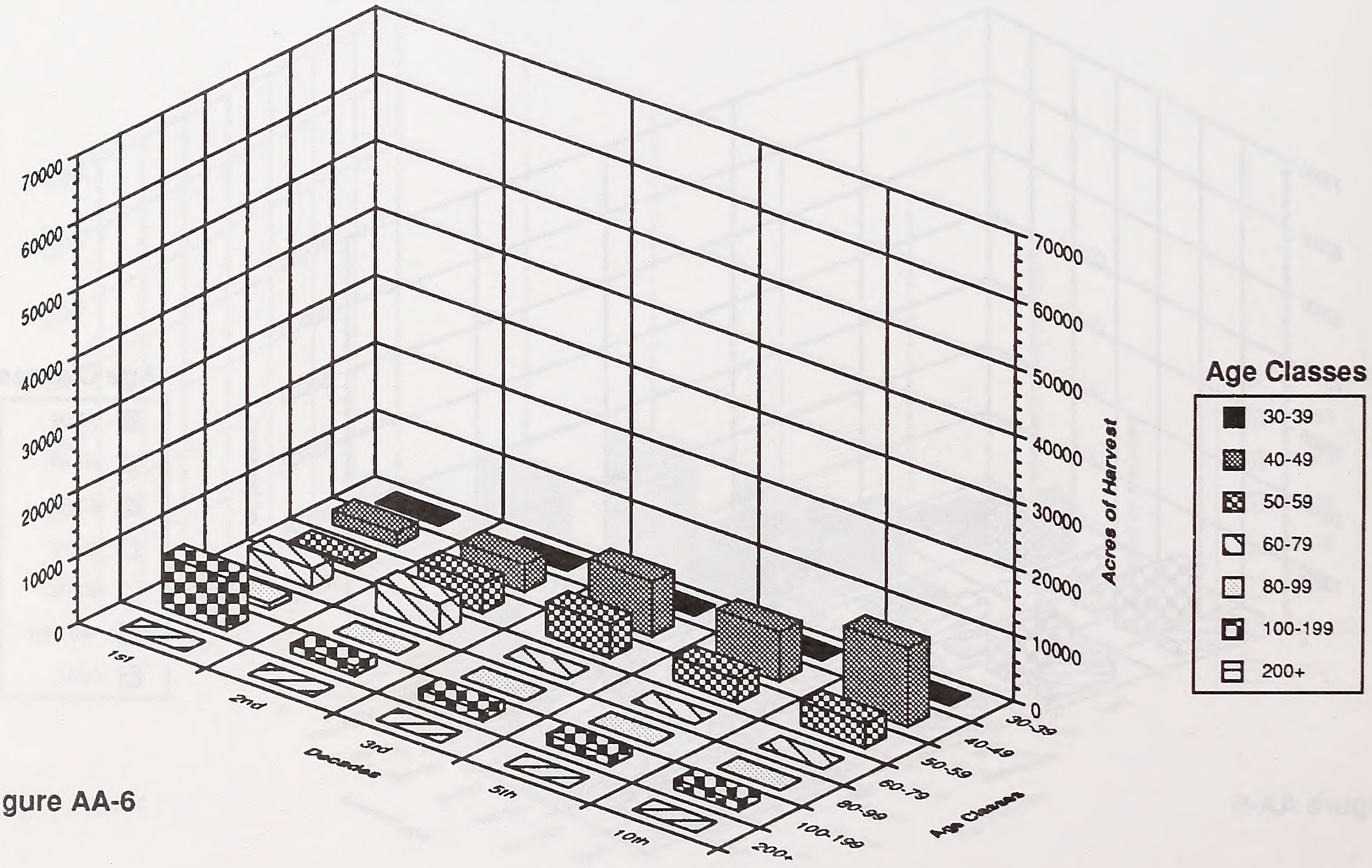

Figure AA-6

Table AA-7. PRMP (ASQ 32 MMBF)

Final Harvest						
	Decade					
Age	1	2	3	5	10	20
30-39						
40-49						
50-59	100		300			
60-79	500	3,200	2,800	5,700	3,500	3,300
80-99	400	700	1,400	600	1,200	1,000
100-199	3,700	3,100	2,800	300	200	200
200+	1,100	600	600			
Total	5,800	7,800	7,900	6,600	4,900	4,500

Thinning/Density Management						
	Decade					
Age	1	2	3	5	10	20
30-39	1,600		200		100	
40-49	1,900	600	1,300	100	1,800	1,000
50-59	1,600	500	900	700	1,500	700
60-79	1,000			500	200	
80-99						
100-199						
200+						
Total	6,100	1,100	2,400	1,300	3,600	1,700

Total Acres (Final Harvest & Thinning)					
	Decade				
Age	1	2	3	5	10
30-39	1,600		200		100
40-49	1,900	600	1,300	100	1,800
50-59	1,700	500	1,200	700	1,500
60-79	1,500	3,200	2,800	6,200	3,700
80-99	400	700	1,400	600	1,200
100-199	3,700	3,100	2,800	300	200
200+	1,100	600	600		
Total	11,900	8,700	10,300	7,900	8,500

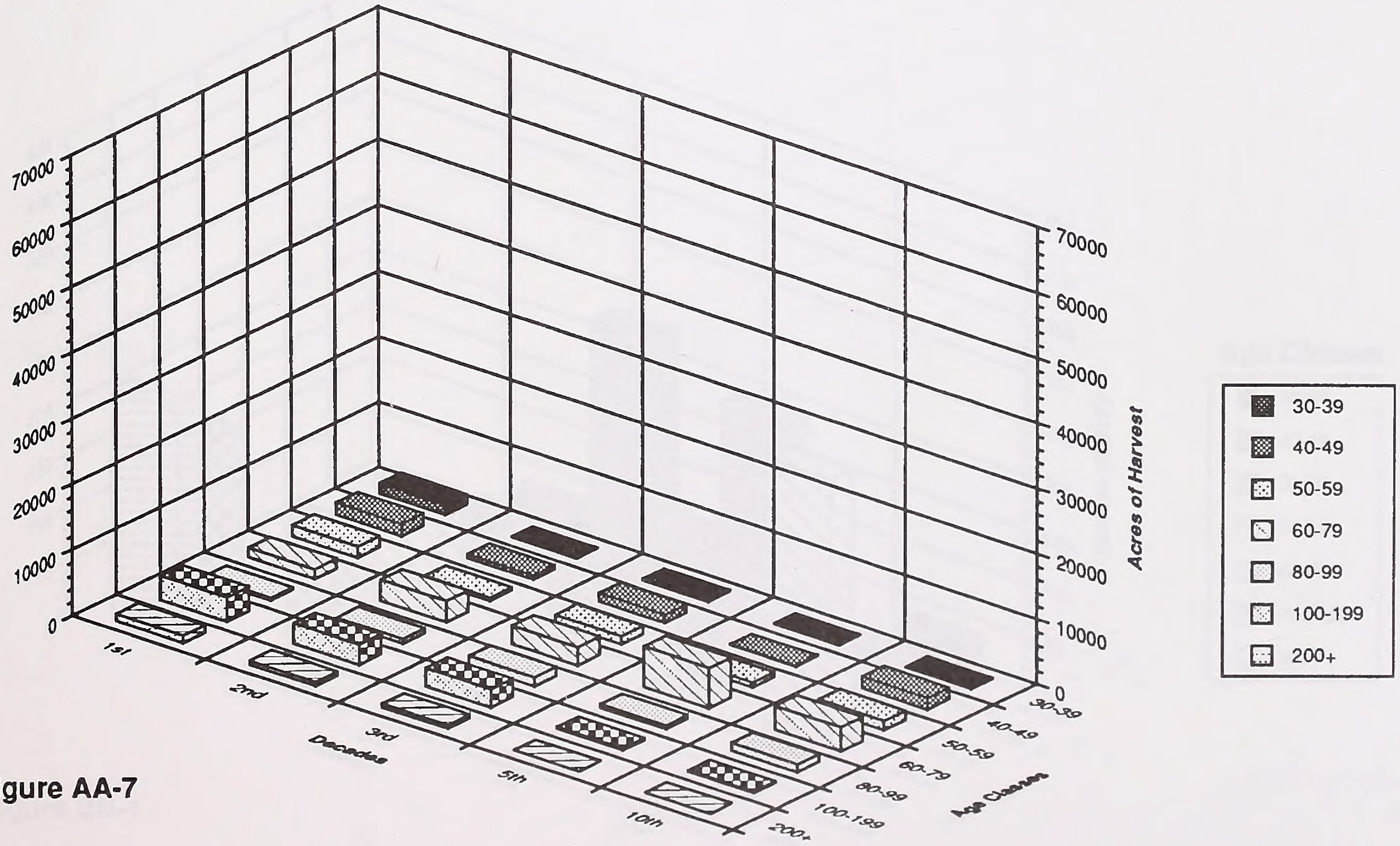

Figure AA-7

Appendix BB. Volume Harvested by Age Class by Decade

Table BB-1. No Action Alternative (NA) 40.1 MMCF or 254 MMBF

Final Harvest					
	Decade				
Age	1	2	3	5	10
30-39					
40-49		36.44	266.48	206.06	
50-59		39.87	69.72	115.76	
60-79		95.69			193.69
80-99		55.45			
100-199	171.97	120.38			2.95
200+	218.21	2.95	2.95	2.95	
Total	390.18	350.78	339.15	324.77	196.64

Thinning/Density Management					
	Decade				
Age	1	2	3	5	10
30-39	10.96	41.08	61.99	52.12	44.20
40-49		9.27		24.24	45.73
50-59					45.86
60-79					68.71
80-99					
100-199					
200+					
Total	10.96	50.35	61.99	76.36	204.50

Total Volume (Final Harvest & Thinning)					
	Decade				
Age	1	2	3	5	10
30-39	10.96	41.08	61.99	52.12	44.20
40-49		45.71	266.48	230.30	45.73
50-59		39.87	69.72	115.76	45.86
60-79		95.69			262.40
80-99		55.45			
100-199	171.97	120.38			2.95
200+	218.21	2.95	2.95	2.95	
Total	401.14	401.13	401.14	401.13	401.14

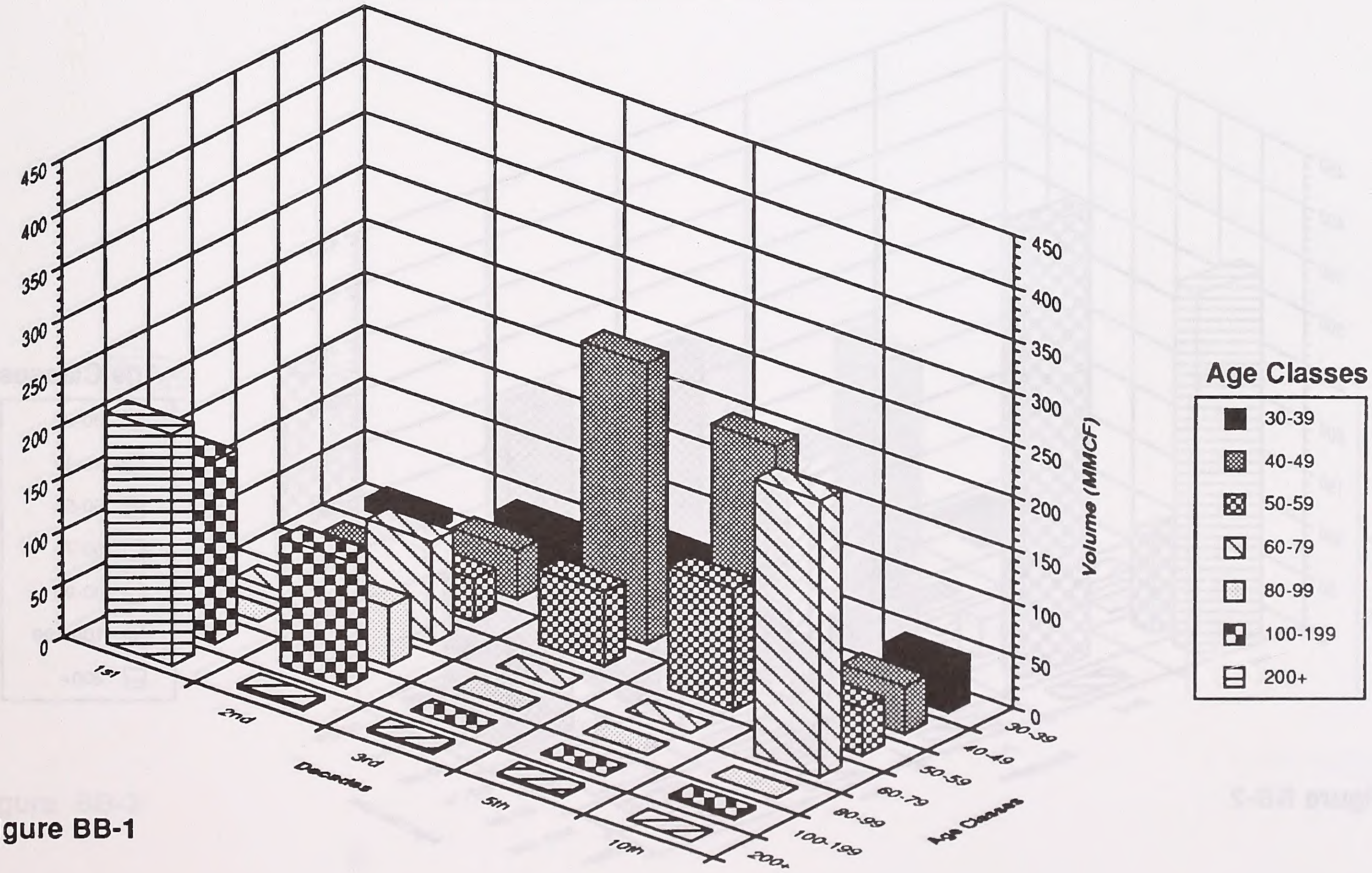

Figure BB-1

Table BB-2. Alternative A 46.2 MMCF or 294 MMBF

Final Harvest					
	Decade				
Age	1	2	3	5	10
30-39					
40-49					92.86
50-59			193.02	319.22	320.63
60-79			197.40	142.95	
80-99		36.13	71.75		
100-199	90.40	426.04			
200+	344.18				
Total	434.58	462.17	462.17	462.17	413.49

Thinning/Density Management					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	27.58				48.68
50-59					
60-79					
80-99					
100-199					
200+					
Total	27.58	0	0	0	48.68

Total Volume (Final Harvest & Thinning)					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	27.58				141.54
50-59			193.02	319.22	320.63
60-79			197.40	142.95	
80-99		36.13	71.75		
100-199	90.40	426.04			
200+	344.18				
Total	462.16	462.17	462.17	462.17	462.17

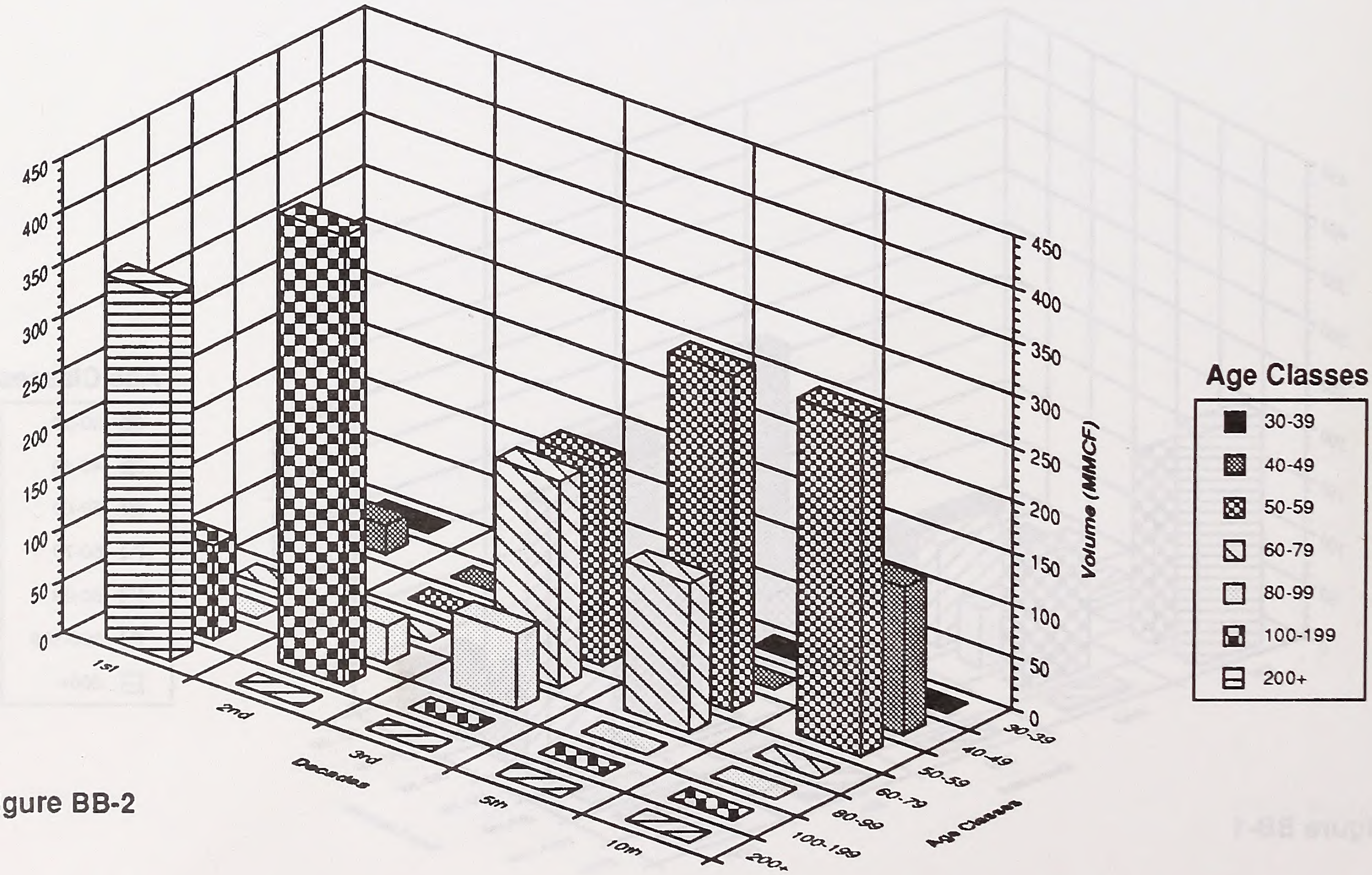

Figure BB-2

Table BB-3. Alternative B 41.9 MMCF or 267 MMBF

Final Harvest					
	Decade				
Age	1	2	3	5	10
30-39					18.22
40-49			75.07	65.78	353.36
50-59			199.20	322.94	47.11
60-79		84.99	144.42	29.96	
80-99		51.17			
100-199	140.95	282.53			
200+	267.77				
Total	408.72	418.69	418.69	418.68	418.69

Thinning/Density Management					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	9.96				
50-59					
60-79					
80-99					
100-199					
200+					
Total	9.96	0	0	0	0

Total Volume (Final Harvest & Thinning)					
	Decade				
Age	1	2	3	5	10
30-39					18.22
40-49	9.96		75.07	65.78	353.36
50-59			199.20	322.94	47.11
60-79		84.99	144.42	29.96	
80-99		51.17			
100-199	140.95	282.53			
200+	267.77				
Total	418.68	418.69	418.69	418.68	418.69

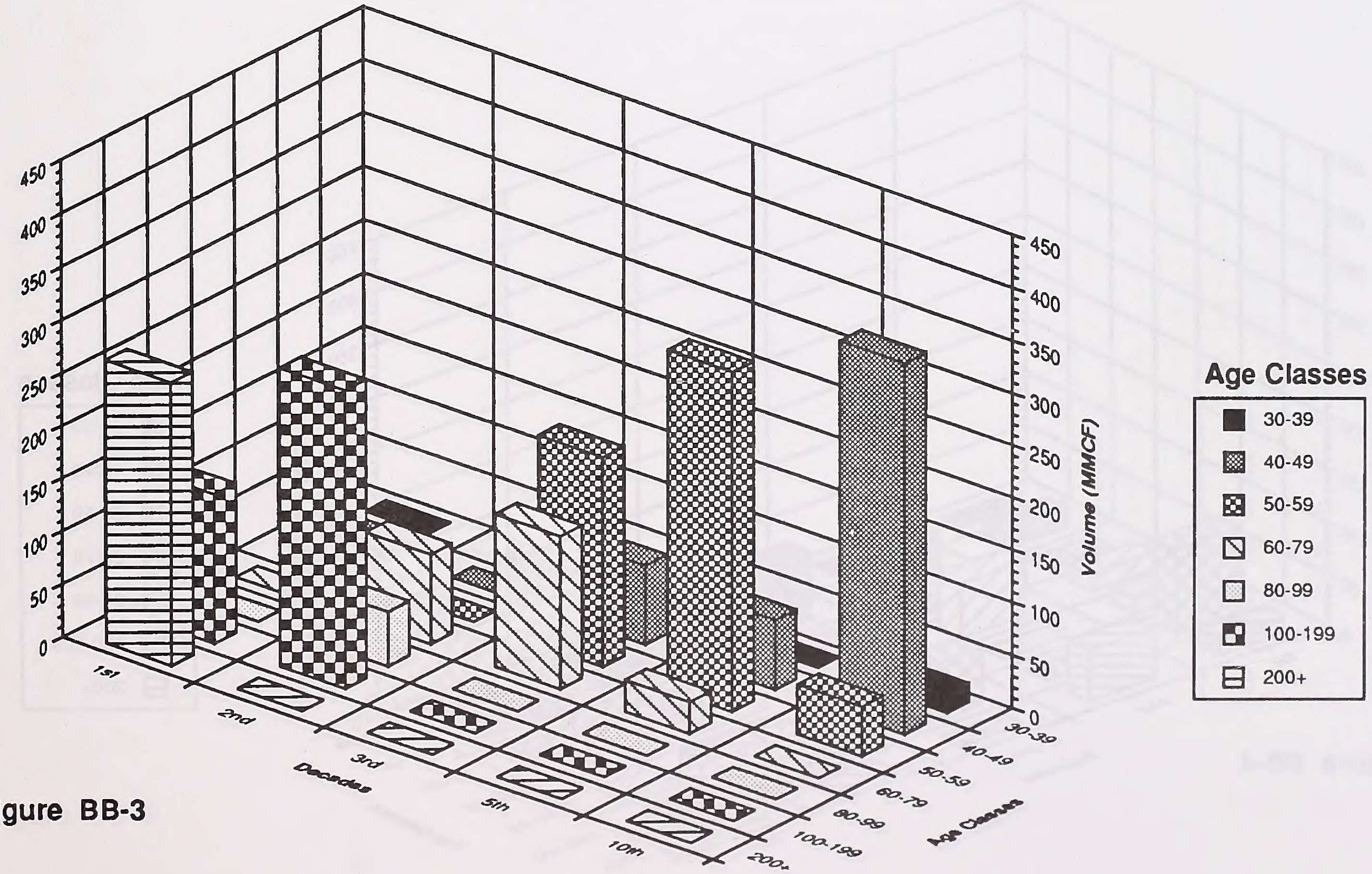

Figure BB-3

Table BB-4. Alternative C 14.0 MMCF or 86 MMBF

Final Harvest					
	Decade				
Age	1	2	3	5	10
30-39					
40-49					
50-59					
60-79	15.72	52.50			5.64
80-99	13.61		22.46		
100-199	80.29		53.62		
200+	14.32	48.45			73.94
Total	123.94	100.95	76.08	0	79.58

Thinning/Density Management					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	16.29	39.26	64.13	61.78	3.28
50-59					
60-79				78.43	57.36
80-99					
100-199					
200+					
Total	16.29	39.26	64.13	140.21	60.64

Total Volume (Final Harvest & Thinning)					
	Decade				
Age	1	2	3	5	10
30-39					
40-49	16.29	39.26	64.13	61.78	3.28
50-59					
60-79	15.72	52.50		78.43	63.00
80-99	13.61		22.46		
100-199	80.29		53.62		
200+	14.32	48.45			73.94
Total	140.23	140.21	140.21	140.21	140.22

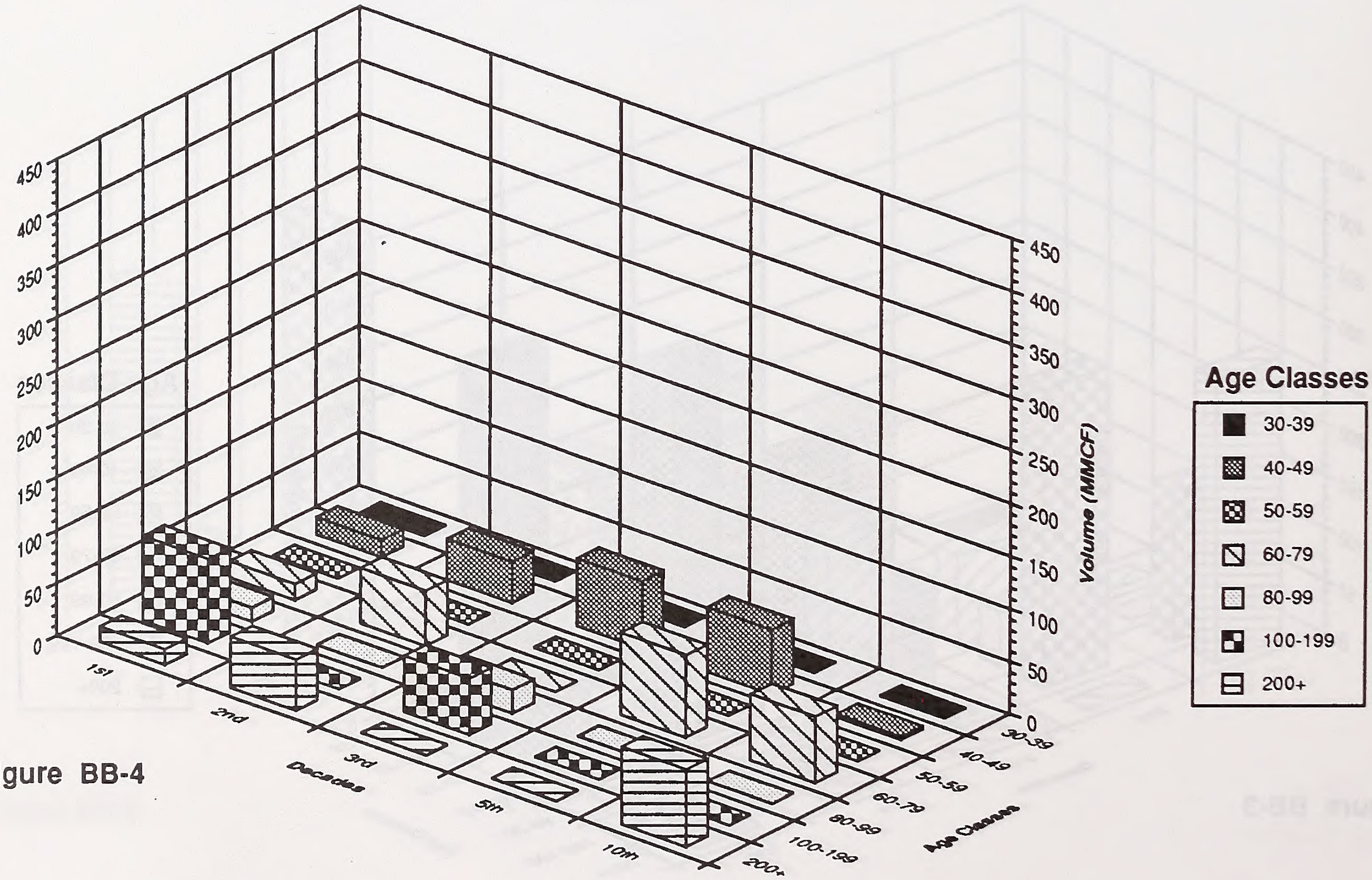

Figure BB-4

Table BB-5. Alternative D 13.5 MMCF or 76 MMBF

Final Harvest

	Decade				
Age	1	2	3	5	10
30-39					
40-49		3.38	8.70	5.21	10.99
50-59	5.69	2.84	14.47	11.86	22.37
60-79	8.22	16.80	28.95	111.14	134.96
80-99	4.55	3.59	13.09	44.07	99.45
100-199	72.96	61.15	75.68	88.71	7.13
200+	20.08	28.84	42.61	3.11	
Total	111.50	116.60	183.50	264.10	274.90

Thinning/Density Management

	Decade				
Age	1	2	3	5	10
30-39					
40-49	7.56	18.40	27.80	25.70	26.80
50-59	15.94				
60-79					
80-99					
100-199					
200+					
Total	23.50	18.40	27.80	25.70	26.80

Total Volume (Final Harvest & Thinning)

	Decade				
Age	1	2	3	5	10
30-39					
40-49	7.56	21.78	36.50	30.91	37.79
50-59	21.63	2.84	14.47	11.86	22.37
60-79	8.22	16.80	28.95	111.14	134.96
80-99	4.55	3.59	13.09	44.07	99.45
100-199	72.96	61.15	75.68	88.71	7.13
200+	20.08	28.84	42.61	3.11	
Total	135.00	135.00	211.30	289.80	301.70

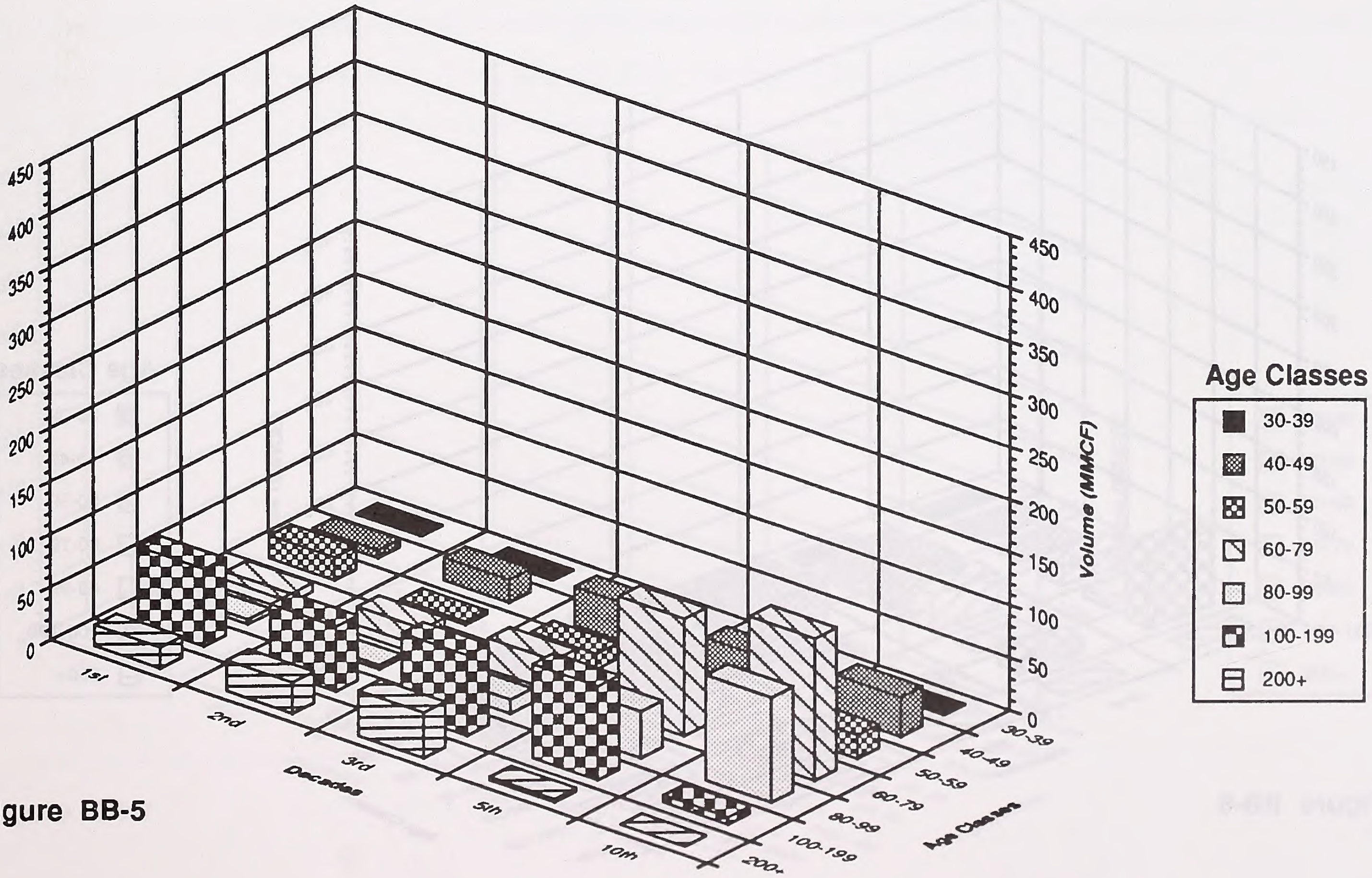

Figure BB-5

Table BB-6. Alternative E 10.7 MMCF or 65 MMBF

Final Harvest

	Decade				
Age	1	2	3	5	10
30-39					
40-49		24.72	43.62	52.97	28.23
50-59	4.18	32.88	48.81	39.46	45.19
60-79	17.94	34.83			
80-99	7.87				
100-199	72.10	14.18	14.18	14.18	14.18
200+					
Total	102.09	106.61	106.61	106.61	87.60

Thinning/Density Management

	Decade				
Age	1	2	3	5	10
30-39					
40-49	4.51				19.01
50-59					
60-79					
80-99					
100-199					
200+					
Total	4.51	0	0	0	19.01

Total Volume (Final Harvest & Thinning)

	Decade				
Age	1	2	3	5	10
30-39					
40-49	4.51	24.72	43.62	52.97	47.24
50-59	4.18	32.88	48.81	39.46	45.19
60-79	17.94	34.83			
80-99	7.87				
100-199	72.10	14.18	14.18	14.18	14.18
200+					
Total	106.60	106.61	106.61	106.61	106.61

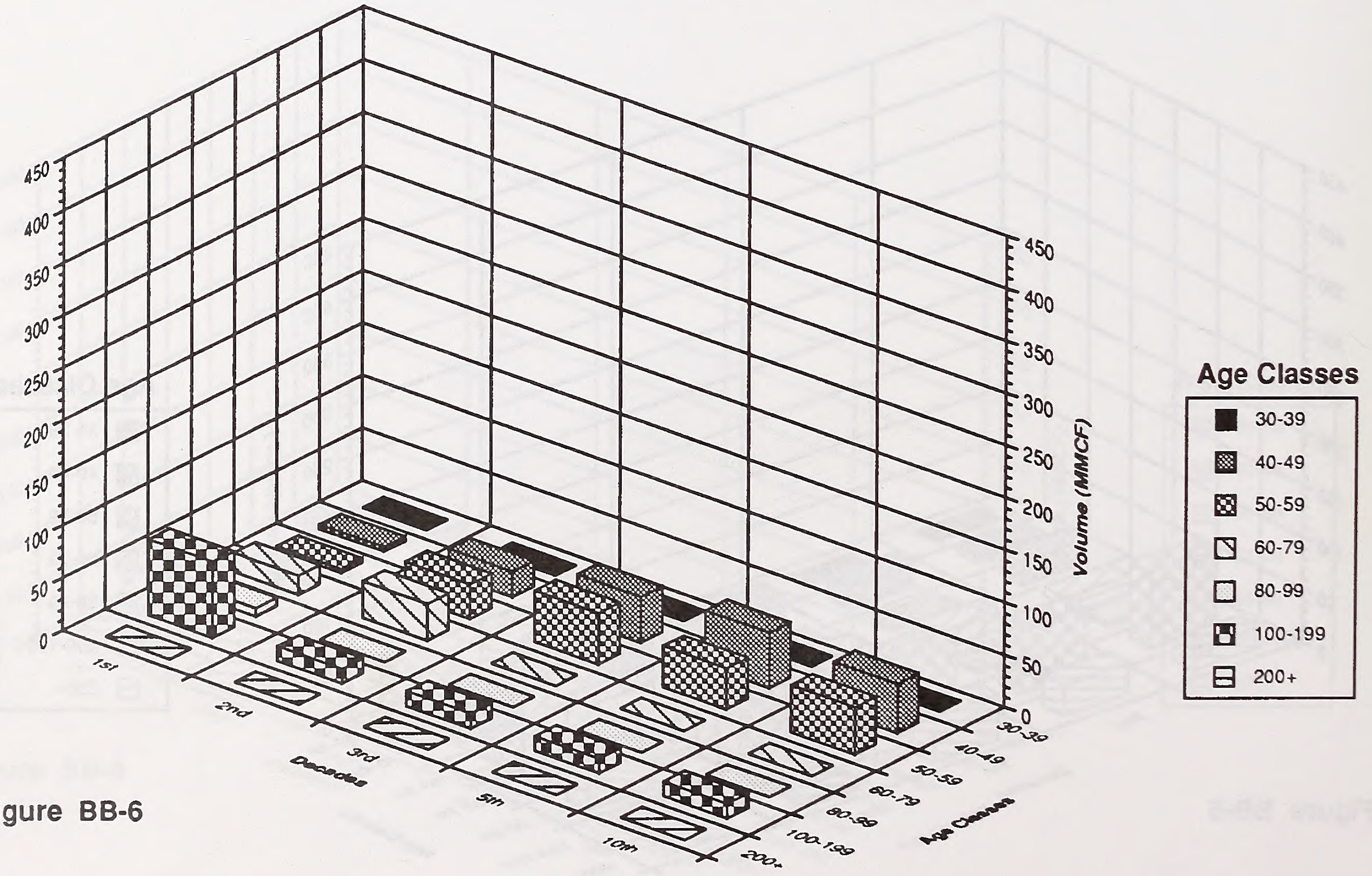

Figure BB-6

Table BB-7. PRMP 5.3 MMCF or 32 MMBF

Final Harvest						
	Decade					
Age	1	2	3	5	10	20
30-39						
40-49						
50-59	.16		22			
60-79	2.07	20.48	16.05	46.40	32.98	33.45
80-99	2.22	3.00	8.77	3.03	10.58	12.14
100-199	29.67	23.26	18.50	2.11	1.62	3.75
200+	9.71	4.05	4.89			
Total	43.83	50.79	48.43	51.54	45.18	49.34

Thinning/Density Management						
	Decade					
Age	1	2	3	5	10	20
30-39	2.52		0.39		0.17	
40-49	2.93	1.51	2.75	0.18	4.23	2.38
50-59	2.30	1.00	1.73	0.99	3.28	1.58
60-79	1.72			0.59	0.44	
80-99						
100-199						
200+						
Total	9.47	2.51	4.87	1.76	8.12	3.96

Total Volume (Final Harvest & Thinning)					
	Decade				
Age	1	2	3	5	10
30-39	2.52		0.39		0.17
40-49	2.93	1.51	2.75	0.18	4.23
50-59	2.46	1.00	1.95	0.99	3.28
60-79	3.79	20.48	16.05	46.99	33.42
80-99	2.22	3.00	8.77	3.03	10.58
100-199	29.67	23.26	18.50	2.11	1.62
200+	9.71	4.05	4.89		
Total	53.30	53.30	53.30	53.30	53.30

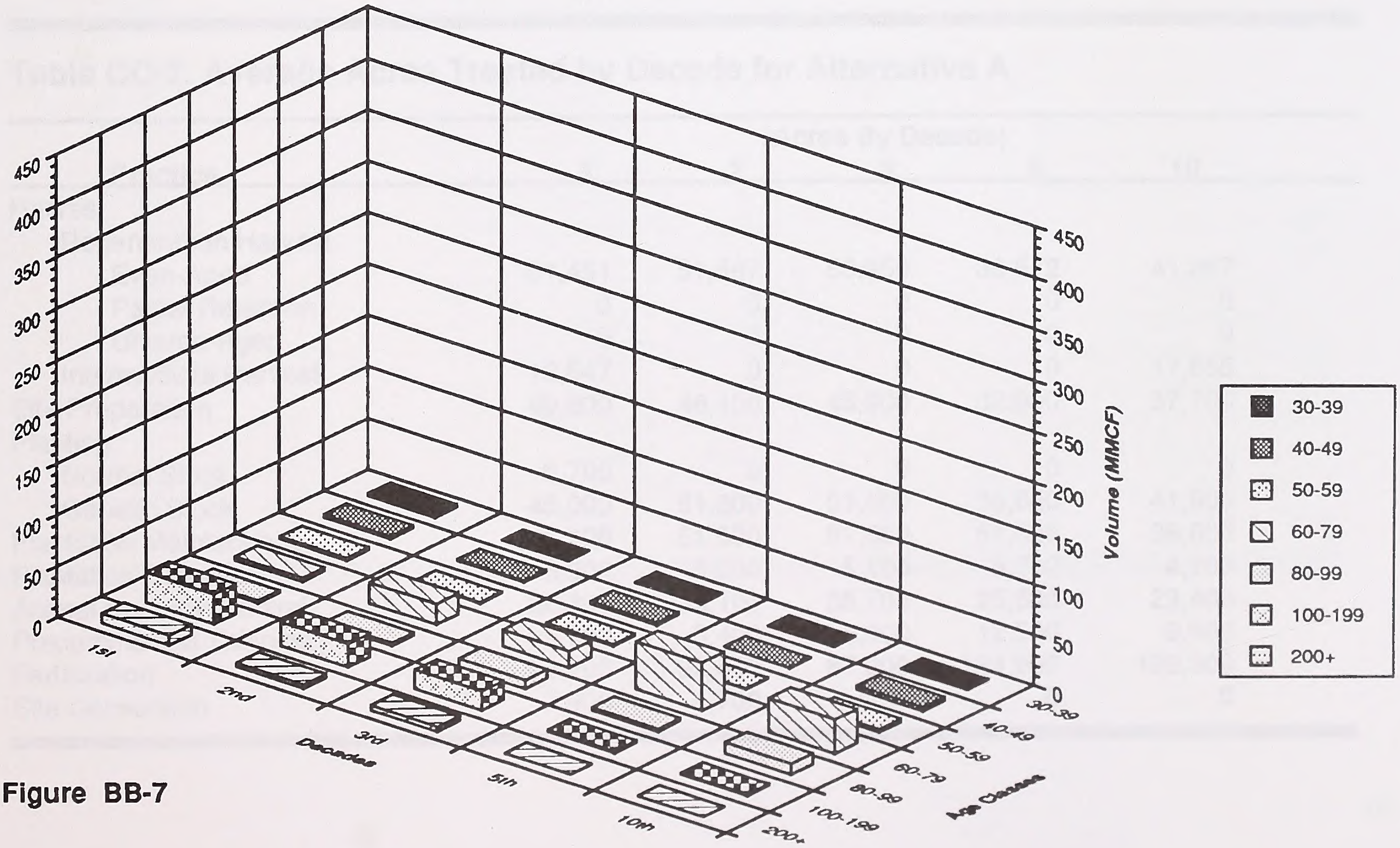

Figure BB-7

Appendix CC. Average Acres Treated by Decades and Alternatives

Table CC-1. Average Acres Treated by Decade for Alternative NA

	(Acres By Decade)				
Practice	1	2	3	5	10
Harvest					
Regeneration Harvest					
Even-Aged	37,297	58,714	45,505	29,608	15,411
Partial Retention	0	0	0	0	0
Uneven-Aged	0	0	0	0	0
Intermediate Harvest	7,279	33,453	40,753	46,671	136,041
Site Preparation	38,200	52,800	39,900	37,300	16,000
Planting					
Normal Stock	4,200	7,100	0	0	0
Genetic Stock	37,700	51,600	44,300	41,500	17,800
Plantation Maintenance	46,600	37,300	58,700	44,300	41,500
Plantation Release	6,000	5,900	4,400	4,100	1,800
Animal Damage Control	29,300	41,100	31,000	29,000	12,500
Precommercial Thinning	40,800	35,500	31,300	35,600	23,000
Fertilization	48,000	70,600	76,600	82,200	150,700
Site Conversion	5,900	1,500	1,900	0	0

Table CC-2. Average Acres Treated by Decade for Alternative A

	(Acres By Decade)				
Practice	1	2	3	5	10
Harvest					
Regeneration Harvest					
Even-Aged	51,451	51,567	50,950	36,572	41,887
Partial Retention	0	0	0	0	0
Uneven-Aged	0	0	0	0	0
Intermediate Harvest	12,547	0	0	0	17,855
Site Preparation	49,600	46,400	45,900	32,900	37,700
Planting					
Normal Stock	9,700	0	0	0	0
Genetic Stock	45,000	51,600	51,000	36,600	41,900
Plantation Maintenance	45,300	51,500	51,600	51,000	36,600
Plantation Release	6,800	5,200	5,100	3,700	4,200
Animal Damage Control	38,300	36,100	35,700	25,600	29,400
Precommercial Thinning	9,700	5,400	6,000	12,500	9,800
Fertilization	79,200	92,400	87,200	124,000	102,300
Site Conversion	7,900	4,700	100	0	0

Table CC-3. Average Acres Treated by Decade for Alternative B

			(Acres By Decade)		
Practice	1	2	3	5	10
Harvest					
Regeneration Harvest					
Even-Aged	49,986	47,588	42,936	41,508	46,895
Partial Retention	0	0	0	0	0
Uneven-Aged	0	0	0	0	0
Intermediate Harvest	4,596	0	0	0	0
Site Preparation	47,500	42,900	38,600	37,400	42,200
Planting					
Normal Stock	8,100	0	0	0	0
Genetic Stock	44,400	47,600	42,900	41,500	46,900
Plantation Maintenance	44,500	50,000	47,600	42,900	41,500
Plantation Release	6,200	4,800	4,300	4,200	4,700
Animal Damage Control	36,700	33,300	30,100	29,000	32,900
Precommercial Thinning	4,700	4,900	3,600	11,200	11,400
Fertilization	69,900	89,200	76,000	109,100	82,0000
Site Conversion	10,400	900	0	0	0

Table CC-4. Average Acres Treated by Decade for Alternative C

			(Acres By Decade)		
Practice	1	2	3	5	10
Harvest					
Regeneration Harvest					
Even-Aged	0	0	0	0	0
Partial Retention	13,508	14,066	8,178	0	8,766
Uneven-Aged	0	0	0	0	0
Intermediate Harvest	7,027	16,792	27,448	41,568	12,392
Site Preparation	14,000	12,700	7,400	0	7,900
Planting					
Normal Stock	7,700	7,000	4,100	0	4,400
Genetic Stock	7,700	7,000	4,100	0	4,400
Plantation Maintenance	43,800	13,500	14,100	8,200	4,000
Plantation Release	2,300	1,400	800	0	900
Animal Damage Control	10,700	9,800	5,700	0	6,100
Precommercial Thinning	8,800	3,600	2,800	900	2,200
Fertilization	47,300	58,600	58,600	44,600	41,400
Site Conversion	5,200	500	800	0	0

Table CC-5. Average Acres Treated by Decade for Alternative D

Practice	(Acres By Decade) 1	2	3	5	10
Harvest					
Regeneration Harvest					
Even-Aged	11,507	11,853	18,620	24,287	23,887
Partial Retention	0	0	0	0	0
Uneven-Aged	0	0	0	0	0
Intermediate Harvest	10,304	9,378	13,374	12,631	12,714
Site Preparation	13,200	10,400	16,800	21,900	21,500
Planting					
Normal Stock	0	0	0	0	0
Genetic Stock	14,300	11,600	18,600	24,300	23,900
Plantation Maintenance	44,800	11,500	11,600	18,600	24,300
Plantation Release	2,600	1,200	1,900	2,400	2,400
Animal Damage Control	10,000	8,100	13,000	17,000	16,700
Precommercial Thinning	2,100	6,000	2,900	4,700	5,400
Fertilization	33,500	61,200	53,500	35,800	35,400
Site Conversion	8,200	600	800	0	0

Table CC-6. Average Acres Treated by Decade for Alternative E

Practice	(Acres By Decade) 1	2	3	5	10
Harvest					
Regeneration Harvest					
Even-Aged	12,639	14,451	14,860	12,585	9,821
Partial Retention	0	0	0	0	0
Uneven-Aged	0	0	0	0	0
Intermediate Harvest	2,085	0	0	0	7,120
Site Preparation	12,200	13,000	13,400	11,300	8,900
Planting					
Normal Stock	0	0	0	0	0
Genetic Stock	13,400	14,500	14,900	12,600	9,900
Plantation Maintenance	42,800	12,600	14,500	14,900	12,600
Plantation Release	1,700	1,400	1,500	1,300	1,000
Animal Damage Control	9,400	10,100	10,400	8,800	6,900
Precommercial Thinning	2,900	1,500	1,400	3,200	2,600
Fertilization	25,900	26,300	22,000	27,600	28,800
Site Conversion	2,400	400	300	0	0

Table CC-7. Average Acres Treated by Specific Practices by Decade for the PRMP

Practice	(Acres By Decade) 1	2	3	5	10
Harvest					
Regeneration Harvest					
Even-Aged	5,800	7,600	7,900	6,600	4,900
Partial Retention	0	0	0	0	0
Uneven-Aged	0	0	0	0	0
Intermediate Harvest	6,100	1,100	2,400	1,300	3,600
Site Preparation	7,600	7,500	7,700	6,600	5,200
Planting					
Normal Stock	2,200	3,100	3,200	2,800	2,400
Genetic Stock	5,400	6,100	6,300	5,300	3,900
Plantation Maintenance	48,100	10,600	11,000	9,200	6,900
Plantation Release	100	100	100	100	100
Animal Damage Control	8,000	7,600	7,900	6,600	4,900
Precommercial Thinning	34,700	3,500	4,600	4,700	4,000
Fertilization	12,000	2,800	1,700	2,100	1,800
Site Conversion	1,200	100	100	100	100
Pruning	8,700	900	1,100	1,200	1,000

Appendix DD. Effects of Silvicultural Practices and Silvicultural Systems on Economic Value

Introduction

The analysis in this appendix was developed by the Roseburg and Medford BLM Districts. It summarizes the results of an analysis of timber yield and wood quality effects on economic return for selected silvicultural systems proposed for the PRMP. Silvicultural systems affect wood quality, timber yields, and economic return by changing tree and stand growth patterns and the magnitude of discounted costs and benefits. The silvicultural systems analyzed are representative of management regimes proposed for the next decade on BLM-administered lands classified as General Forest Management Areas (GFMA). This single analysis is intended to portray results that reflect average stand conditions and average response to treatments on a statewide basis for BLM-managed lands in western Oregon. While these silvicultural systems will vary somewhat within and between districts, they are representative enough to display relative effects of similar silvicultural systems.

Silvicultural Systems Analyzed

Table DD-1 describes the various silvicultural systems analyzed. Analysis was limited to silvicultural systems incorporating precommercial thinning, commercial thinning, forest fertilization, and pruning compared to a base prescription which represents an overstocked stand with no treatments until a final regeneration harvest.

Analytical Assumptions

Following are the specific assumptions made in the analysis:

1. The difference in site productivity can significantly affect yields and financial returns (Koss and Scott 1978). BLM in western Oregon manages 12 planning units designated as Sustained Yield Units (SYUs). Site quality is variable both within and between SYUs. Due to the complexity of trying to analyze each SYU separately, the Douglas SYU of the Roseburg District was selected as representative for BLM-administered lands in western Oregon. Average productivity expressed as site index for this SYU is 100 using Hann-Scrivani site index curves (Hann and Scrivani 1987).

   Site Index 100 is the approximate mid-point of average site indexes used by the westside BLM districts for decadal planning purposes in estimating timber yields.

2. The costs for stand establishment treatments were derived from 1989 Roseburg BLM District contract cost data sources weighted by the percent of acres receiving the treatment. Logging and hauling costs were derived from tabular information compiled by the Medford BLM District for general westside BLM use in feasibility analysis for resource management planning.

3. An inflation rate of zero (0) and no future real increase in wood value were assumed. A discount rate of 4 percent was used.

4. The costs of establishing the current stand were not included in this analysis. However, the costs of establishing the next stand were included at the end of the assumed rotations. This convention is consistent with economic analyses done previously for BLM planning purposes in western Oregon.

Table DD-1. Summary of Silvicultural Prescriptions Analyzed

Silvicultural System	Description
Base	Overstocked (overdense) stand averaging 680 trees per acre at age of establishment. Final regeneration harvest at age 60 or 100.
PCT	Overstocked stand; precommercially thinned at age 12 to 250 trees per acre. Final regeneration harvest at age 60 or 100.
PCT/FERT	Overstocked stand; precommercially thinned at age 12 to 250 trees per acre. Fertilizer applied at ages 30 and 45. Final regeneration harvest at age 60 or 100.
PCT/CT [1]	Overstocked stand; precommercially thinned at age 12 to 250 trees per acre. Commercial thinning at age 45. Final regeneration harvest at age 60. Overstocked stand: precommercially thinned at age 12 to 250 trees per acre. Commercial thinning at ages 45 and 65. Final regeneration harvest at age 100.
PCT/FERT/CT [1]	Overstocked stand; precommercially thinned at age 12 to 250 trees per acre. Fertilizer applied at ages 30 and 45. Commercial thinning at age 45. Final regeneration harvest at age 60. Overstocked stand; precommercially thinned at age 12 to 250 trees per acre. Fertilizer applied at ages 30 and 45. Commercial thinning at ages 45 to 60. Final regeneration harvest at age 100.
PCT/Prune	Overstocked stand; precommercially thinned at age 12 to 250 trees per acre. Pruned 80 trees/acre at age 25. Final regeneration harvest at age 60 or 100.

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[1] Silvicultural systems with two descriptive approaches are dependent on assumed rotation lengths. Variations in exact timing of practices will vary by district.

5. Comparisons of effects were made at rotation (regeneration harvest) ages of 60 and 100 years depending on silvicultural system. Sixty years represents probable average statewide minimum rotation ages for BLM. One hundred years represents the probable average BLM rotation age if culmination of mean annual increment is used as the rotation age criteria. (Curtis 1992, Curtis and Marshall 1993).

6. Intangible or intrinsic values (Smith 1987)—such as the potential value of practices for meeting non-timber objectives—were considered beyond the scope of the analysis.

7. Pruning analysis was performed using the addition of select pricing for lumber grades and veneer market. Pruning of the first 17.5 feet (16 feet merchantable log) is assumed to occur at age 25.

8. All gross yield outputs from SWO-Organon were reduced for stocking irregularity, insects and disease, defect and breakage, and effects of green-tree retention at a level of seven large conifers per acre.

9. Timber products harvested were assumed to be a mixture of lumber and veneer. Lumber prices used in TreeVal+ were derived by taking 1989 Table 9 figures shown in Warren (1993). TreeVal+ veneer prices were derived from reviewing Random Lengths publications (Nov. 1992 - Aug. 1993). The use of 1993 veneer pricing instead of associated 1989 values was required due to the lack of readily available data sources.

Analytical Models

Future timber yields and wood quality tree characteristic outputs for managed stands were obtained from simulations using the Systum-1 young stand model, Version 1.8 (Ritchie et al. 1991) and the SWO-Organon growth and yield model Version 4.0 (Hann et al. 1992).

Systum-1 is an individual tree, distance-independent growth model. It is suitable for growing trees from a minimum of 3 years of age up to an age (15-20+ years) compatible with entry into growth models suitable for older stands such as SWO-Organon.

SWO-Organon is an individual tree, distance-independent growth and yield model. It was developed from sampling plots located in the mixed conifer zone of southwestern Oregon. The model was developed primarily to simulate the growth and timber yield of Douglas-fir and mixed conifer stands. The model was designed to allow projections of both even-aged and uneven-aged stand conditions under different silvicultural systems.

Wood value and economic analysis were analyzed using the TreeVal+ (Sachet et al. 1989), DF Prune (Fight et al. 1992), and Forestry Investment Program (FIP) (Ikaheimo 1990) models. The first two programs provide product recovery plus value data and partial cost data to the third model for an integrated economic analysis.

TreeVal+ is an analysis program which calculates tree or stand values based on predicted product recovery. TreeVal+ is appropriate for natural stands or managed plantations. Values of products harvested under the different regimes simulated were obtained from the TreeVal+ program.

DF Prune is a spreadsheet program designed to estimate the financial return from pruning coast Douglas-fir. Values of products harvested under regimes where pruning is simulated were obtained from the DF Prune program.

The Forestry Investment Program (FIP) is a financial analysis program specifically developed for the economic evaluation analysis of silvicultural regimes. FIP utilizes data inputs from SWO-Organon, TreeVal, DF Prune, and other sources in calculations of net present values (NPV). The analysis can be structured to account for inflation, cost changes, and product value changes over time.

Results of Silvicultural Systems Analysis

Tables DD-2 and DD-3 show the effects on timber yield and economic returns for the different silvicultural systems for rotation ages of 60 and 100 years after stand initiation. Wood quality change is not directly displayed but is expressed in the economic measures.

Percent change in cubic volume is the net timber yield increase above that of the base silvicultural system expressed as percent of net conifer cubic volume. NPV is calculated by subtracting discounted costs of producing timber from the discounted revenues from harvest. Percent change in NPV is the change in NPV relative to the NPV of the base silvicultural system. The benefit cost ratio depicts total discounted revenues divided by total discounted costs.

Value per cunit (100 cubic feet) is a simple relationship between total net revenues gained from a set of practices and the total net timber yield. The ratio allows interpretation of how each silvicultural practice functions to positively or negatively affect quantity (volume production) and/or quality (additions to value) of products produced.

All silvicultural systems showed an increase in timber yield above the base at both rotation ages analyzed. Gains were similar at both ages for silvicultural systems which included commercial thinning. The commercial thinnings harvest trees which would otherwise die before final harvest and would not be recoverable as a useable product. (Smith 1962, Reukema and Bruce 1977). Those silvicultural systems that did not include commercial thinning did not recover this mortality and therefore showed a decline in percent yield increase at 100 years.

All silvicultural systems showed a positive economic return at both rotation ages simulated. All tested combinations of practices produced higher levels of economic return than the base level alone. Economic returns are greater for all systems for the 60-year rotations.

Table DD-2. Comparison of Yield Changes and Economic Returns for a 60-Year Rotation

Silvicultural System	Percent Change in Cubic Volume	Net Present value (NPV)	Percent Change In NPV	Benefit/ Cost Ratio	Value Per Cunit
Base		$301		1.38	$3.78
PCT	+7	$530	+76	1.68	$6.21
PCT/FERT	+13	$611	+103	1.72	$6.78
PCT/CT	+15	$497	+65	1.49	$5.43
PCT/FERT/CT	+21	$677	+125	1.62	$7.04
PCT/Prune	+7	$713	+137	1.71	$8.35

Notes:

Percent change in cubic volume is the increase in volume above that produced by base prescription (overstocked stand condition).

Net present value (NPV) is calculated by subtracting discounted costs from discounted benefits.

Percent change NPV is the percentage of NPV increase or decrease compared to the NPV of the base prescription.

Benefit cost ratio is calculated by dividing discounted benefits by discounted costs.

Value per cubic foot = Total NPV divided by total yield of all harvests in cunits (100 cubic feet).

Table DD-3. Comparison of Yield Changes and Economic Returns for a 100-Year Rotation

Silvi-cultural System	Percent Change in Cubic Volume	Net Present value (NPV)	Percent Change In NPV	Benefit/ Cost Ratio	Value Per Cunit
Base		$470	—	3.04	$3.47
PCT	+2	$526	+11	2.74	$3.80
PCT/FERT	+5	$532	+13	2.57	$3.75
PCT/CT	+17	$625	+32	1.86	$3.84
PCT/FERT/CT	+20	$716	+52	1.88	$4.39
PCT/Prune	+2	$539	+15	2.37	$3.90

Notes:

Percent change in cubic volume is the increase in volume above that produced by base prescription (overstocked stand condition).

Net present value (NPV) is calculated by subtracting discounted costs from discounted benefits.

Percent change NPV is the percentage of NPV increase or decrease compared to the NPV of the base prescription.

Benefit cost ratio is calculated by dividing discounted benefits by discounted costs.

Value per cubic foot = Total NPV divided by total yield of all harvests in cunits (100 cubic feet).

Appendix EE. Timber Supply Analysis For BLM Planning—An Update

Background

In 1992, the USDI Bureau of Land Management released draft environmental impact statements (EISs) on Draft Resource Management Plans for the Coos Bay, Eugene, Medford, Roseburg, and Salem Districts, and the Klamath Falls Resource Area of the Lakeview District. These drafts included a comprehensive analysis of timber supply in western Oregon. The analysis covered a period of initial plan implementation (1991-2000) and the period thereafter (2001-2010). The baseline period that provides a historical benchmark for comparison was 1984-1988.

Details of the original analysis are described in the draft EISs (Anonymous 1992). Regional stumpage price results were used to calculate price changes for the assessment of personal income, employment, and population effects. Harvest and log consumption results are presented in Chapter 4.

Key Concepts

Implemented on all districts, each set of similar resource management plan alternatives represented a different timber supply policy, or alternative theme, for USDI Bureau of Land Management (BLM) administered lands in western Oregon. The question being addressed by this analysis is how do changes in BLM timber supply policy affect how much timber is harvested and consumed in various parts of western Oregon? Western Oregon was divided into subregions that differed in ownership distribution, private timber availability, and silvicultural management, while at the same time served as logical reporting areas for western Oregon BLM Districts. Changes in one subregion could affect another through the transportation of logs from harvest origin to processing destination. The analysis recognized that the BLM is just one timber supplier within western Oregon and that the impact of harvest changes is felt where the timber is actually consumed. The amount of timber offered for sale by the BLM affects stumpage price. In turn, stumpage price influences private timber harvest. The lower the BLM sale quantity, the higher stumpage prices, and the higher the level of private timber harvest.

Timber demand is determined by factors outside the control of the BLM such as housing starts and other national economic variables like gross domestic product and the interest rate. Year to year fluctuations in timber demand were averaged over a 10 year period. Timber supply is determined by ownership, location, and stand condition. Ownership determines the policy specifying the conditions under which the timber may be harvested. Location accounts for variations in species composition and the amount of timber available for harvest. Stand condition measures the amount of harvestable volume available on a per acre basis, as well as the growth rate and stage of development of this volume. Private timber harvest is directly proportional to stumpage prices. This analysis accounted for changes in private timber supply by assessing inventory conditions at the beginning of each analysis period. For public agencies such as the USDA Forest Service and the BLM, timber supply is fixed at the planned allowable sale quantity; regardless of the stumpage price.

Market equilibrium defines a balance between timber supply and demand: the amount of timber harvested equals the amount of timber consumed at the market clearing price. Implementing a new BLM timber policy will disrupt this balance and leads to adjustments in the stumpage price such that a new timber supply and demand balance is created. In this analysis, market equilibrium is explicitly recognized for the Pacific Northwest - westside region, and this implies a local equilibrium within each western Oregon subregion.

Updated Procedures

As was the case in 1992, the analysis consisted of the following steps for the 1991-2000 period[1]: (1) regional market equilibrium, (2) disaggregation of the private harvest, (3) timber harvest by ownership, (4) reapportioning harvest into log consumption; and for the 2001-2010 period, (5) updating the private inventory, projecting the private harvest, and re-estimating log consumption.

Timber Assessment Market Model (TAMM) (Adams and Haynes 1980, Haynes 1990) run[2] results for the 1992 analysis indicated a linear relationship between private timber supply and BLM alternative sale quantity (Anonymous, 1992). This analysis relied on interpolating the results from two updated TAMM runs representing Federal timber supply levels of 187 million cubic feet per year (mmcf/year) and 322 mmcf/year respectively. The first run[3] corresponds to the Resources Planning Act (RPA) base run used to evaluate the Forest Plan for "Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl". The second run[4] represented an arbitrarily set higher level of Federal timber supply. The interpolations were based on changes in the BLM share of the Pacific Northwest - westside Federal timber supply for the alternative theme being analyzed. National Forest harvest levels were held at their level in the 1994 RPA base run (93 mmcf/year). The other public harvest for the Pacific Northwest - westside supply region was left unchanged at 147 mmcf/year.

When compared to the base run used in the 1992 analysis[5], the April 1994 RPA TAMM base run included several updates relevant to the Pacific Northwest - westside supply region[6]. The most relevant was an overall reduction in private timber supply due to inventory updates. This had the effect of lowering TAMM's estimate of private growing stock removals given similar policy and economic conditions used in the 1992 analysis. Other TAMM updates included revisions in historical input data for revised estimates of the proportion of sawtimber volume from growing stock removals. Observed harvest values for the years 1991 and 1992 replaced estimates used in the 1992 analysis.

The procedures and assumptions used to complete steps (2) - (5) above remained the same as those used in the 1992 analysis (see Anonymous, 1992).

Results and Discussion

Results are presented in Tables EE-1-3. When compared with the 1992 analysis, the results indicate an overall lower level of private timber supply under higher stumpage price levels. The higher stumpage prices reflect the markedly lower level of timber supply from National Forests. In the 1992 analysis, National Forests were held at a supply level of 240 mmcf/year (consistent with their proposed plan modifications under the Interagency Scientific Committee conservation strategy for the northern spotted-owl). However, under implementation of the President's Forest Plan, the National Forest timber supply is reduced to 93 mmcf/year. In spite of this price increase, the level of private harvest is lower than estimated in the 1992 analysis. This reflects the private inventory updates in TAMM.

When compared to the 1984-1988 baseline, the private harvest under each BLM alternative theme increases over 1991-2000. This can be attributed to increases from the non-industrial private ownership. Comparison of the 2001-2010 projections with the 1991-2000 harvest disaggregation shows a dramatic increase in the total private harvest, over 130 million cubic feet per year. One important qualification for this harvest gain is that pre-1990 forest practice rules and related environmental constraints on the private timberlands remain unchanged through 2010. Therefore, these increases may not be entirely attainable given recent changes in Oregon forest practice regulations for stream protection and proposed conservation restrictions on private lands for the marbled murrelet, northern spotted owl, and possibly coho salmon.

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[1] See Anonymous (1992) for a detailed description of each step.

[2] TAMM90 log runs 582, 583, 584, and 587.

[3] Timber Assessment Market Model - 1993 Montana Version, LR-207 (RPA-Base, 4/14/94).

[4] Timber Assessment Market Model - 1993 Montana Version, Log Run CT2, June 24, 1994.

[5] TAMM90, Log-Run 581, April 9, 1992.

[6] R. Haynes, and J. Mills. Social and Economic Values Research Program, USDA Forest Service, Pacific Northwest Research Station, Portland Forestry Sciences Laboratory, PO Box 3890, Portland, Oregon, 97208.

Table EE-1. Regional Market Equilibrium Results by BLM Resource Management Plan Theme

Bureau of Land Management		Timber Supply Analysis Results	
Resource Management Plan Theme	Allowable Sale Quantity (mmcf/year)	1991-2000 Regional Stumpage Price (1982 $/mbf)	1993-2000 Western Oregon Private Growing Stock Removals (million cubic feet per year)
1984-1988 Historical	199	$112.42	602
No Action	187	$255.63	618
A	250	$250.41	610
B	224	$252.53	613
C	67	$266.05	635
D	74	$264.94	633
E	56	$267.07	637
PRMP	35	$268.86	640
TAMM LR-207	94	$263.64	631
TAMM LR-CT2	136	$251.85	612

Abbreviations used in above table:
mbf - thousand board feet, long log scale.
mmcf/year - million cubic feet per year.

Table EE-2. Results for the 1993-2000 Private Harvest Disaggregation and 2001-2010 Harvest Projections

BLM Resource Management Plan Theme	Private Harvest, Western Oregon (million cubic feet per year) 1993-2000 IND	NIPF	TOTAL	2001-2010 IND	NIPF	TOTAL
PRMP (BLM ASQ = 35)	465	175	640	558	213	771
No Action (BLM ASQ = 187)	449	169	618	549	208	757
Alternative A (BLM ASQ = 250)	443	167	610	545	206	751
Alternative B (BLM ASQ = 224)	446	168	614	547	207	754
Alternative C (BLM ASQ = 67)	461	174	645	556	212	768
Alternative D (BLM ASQ = 74)	460	174	634	555	211	766
Alternative E (BLM ASQ = 56)	462	175	637	556	212	768
Timber Availability[1] (BLM ASQ = 190)	544	125	669	557	125	682
	IND	NIPF	TOTAL			
1984-1988 Baseline (BLM Harvest = 202)	525	77	602			

Abbreviations used in above table:

PRMP - Proposed resource management plan

IND - Private industrial ownership

NIPF - Private non-industrial ownership

BLM ASQ - Bureau of Land Management resource management plans cumulative allowable sale quantity for western Oregon (million cubic feet per year). Includes the Klamath Resource Area of the Lakeview District

BLM Harvest - Bureau of Land Management actual harvest (million cubic feet per year)

[1] Sessions, John., coordinator. 1990. Timber for Oregon's tomorrow. The 1989 update. Corvallis, OR. Oregon State University, College of Forestry, Forest Research Lab. 183 p.

Table EE-3. Log Consumption by BLM Resource Management Plan Theme

	Log Consumption by Western Oregon Processing Facilities (million cubic feet per year)							
BLM Resource Management Plan Theme	**1993-2000**				**2001-2010**			
	HARV	**END CNSMP**	**EXOG CNSMP**	**TOTAL CNSMP**	**HARV**	**END CNSMP**	**EXOG CNSMP**	**TOTAL CNSMP**
PRMP	797	761	97	858	928	882	97	979
No Action	929	890	98	987	1,067	1,018	98	1,115
Alternative A	982	942	97	1,039	1,123	1,072	97	1,170
Alternative B	961	922	97	1,019	1,101	1,051	97	1,148
Alternative C	825	789	97	886	958	911	97	1,008
Alternative D	831	794	97	892	964	917	97	1,014
Alternative E	816	779	97	876	947	900	97	997

	HARV	**END CNSMP**	**EXOG CNSMP**	**TOTAL CNSMP**
1984-1988 Baseline	1,248	1,196	98	1,294

Abbreviations used in above table:
PRMP - Proposed resource management plan

HARV - Total harvest from all ownerships within western Oregon (million cubic feet per year).

END CNSMP - Consumption of logs originating from ownerships within western Oregon (million cubic feet per year). The difference between HARV and END CNSMP represents the volume of timber originating in western Oregon, but processed by out-of-state or eastern Oregon mills.

EXOG CNSMP - Consumption of logs originating from ownerships from eastern Oregon and out-of-state (million cubic feet per year). Differences reflect the effect of implementing different BLM resource management plan alternatives on Klamath Resource Area of the Lakeview District in eastern Oregon.

TOTAL CNSMP - Total log consumption (all origins) by western Oregon processing facilities (million cubic feet per year).

Western Oregon was a net importer of logs over the 1984-1988 period as total consumption exceeds harvest. This was not allowed to vary in this analysis. Differences in log consumption across BLM resource management plan alternatives were less noticeable given the large share of timber harvest still forthcoming from all other ownerships. For all BLM resource management plan themes, log consumption in western Oregon is projected to decrease when compared to the 1984-1988 baseline period. Most of this decrease is from reduced National Forest allowable timber sale quantities under the President's Forest Plan and TAMM reductions in private timber availability. Private harvest increases in the 2001-2010 period translate into higher levels of consumption for this period.

Literature Cited

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Appendix FF. Consistency of the Proposed Resource Management Plan With State of Oregon Plans

Consistency of the PRMP with Oregon Statewide LCDC Planning Goals and Objectives

Statewide Goal Number 1: Citizen Involvement

Description - To develop a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process. Federal and other agencies shall coordinate their planning efforts with the affected government bodies and make use of existing local citizen involvement programs established by cities and counties.

Consistency of Proposed Resource Management Plan - BLM's land use planning process provides for public input at various stages. Public input was specifically requested in developing issues, planning criteria, and the proposed resource management plan. Coordination with affected government bodies, including the governor's forest planning team, has been ongoing and will continue. BLM has used county planning departments to provide linkage to local citizen involvement programs.

Statewide Goal Number 2: Land Use Planning

Description - To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.

Consistency of Proposed Resource Management Plan - The proposed resource management plan has been developed in accordance with the land use planning process authorized by the Federal Land Policy and Management Act of 1976, which provides a policy framework for all decisions and actions. The process includes issue identification, inventories, and evaluation of alternative choices of action. Intergovernmental coordination in the planning process is discussed in Chapter 5.

Statewide Goal Number 3: Agricultural Lands

Description - To preserve and maintain existing commercial agricultural lands for farm use, consistent with existing and future needs for agricultural products, forest, and open space.

Consistency of Proposed Resource Management Plan - The proposed resource management plan does not exclude BLM-administered grazing land from grazing use or affect the use of other lands for agriculture use.

Statewide Goal Number 4: Forest Lands

Description - To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with the sound management of soil, air, water, and fish and wildlife resources and provision for recreational opportunities and agriculture.

Consistency of Proposed Resource Management Plan - BLM-administered lands in the planning area are predominately forest land and woodlands. The proposed resource management plan would not lead to substantial conversion of those lands to nonforest uses. Conversion areas such as new forest roads and utility rights-of-way would be limited to the minimum width necessary for management and safety, and the latter limited to existing corridors where practical. The proposed resource management plan is consistent with the state's forest land protection policies, with one possible exception (see Forestry Program for Oregon Objective: Forest Protection below).

Statewide Goal Number 5: Open Spaces, Scenic and Historic Areas, and Natural Resources

Description - To conserve open space and protect natural and scenic resources.

Programs shall be provided that will:

- Assure open space.
- Protect scenic and historic areas and natural resources for future generations.
- Promote healthy and visually attractive environments in harmony with the natural landscape character.

The location, quality and quantity of the following resources shall be inventoried:

- Land needed or desirable for open space.
- Mineral and aggregate resources.
- Energy sources.
- Fish and wildlife areas and habitats.
- Ecologically and scientifically significant natural areas, including desert areas.
- Outstanding scenic views and sites.
- Water areas, wetlands, watersheds, and groundwater resources.
- Wilderness areas.
- Historic areas, sites, structures, and objects.
- Cultural areas.
- Potential and approved Oregon recreation trails.
- Potential and approved federal wild and scenic waterways and state scenic waterways.

Where no conflicting uses for such resources have been identified, such resources shall be managed so as to preserve their original character. Where conflicting uses have been identified, the economic, social, environmental, and energy consequences of the conflicting uses shall be determined and programs developed to achieve the goal.

Based on the analyses of economic, social, environmental, and energy consequences to Goal 5 resources listed above, conflicting uses of (BLM-administered) lands and resources may be resolved by selection of three management options: (1) protect the resource site; (2) allow conflicting uses fully; or (3) limit conflicting uses. This is achieved by designating with certainty what uses and activities are allowed fully, what uses and activities are not allowed at all, which uses are allowed conditionally, and what specific standards or limitations are placed on the permitted and conditional uses and activities for each resource site.

Consistency of Proposed Resource Management Plan - Natural, historic and visual resources were considered in the development of the proposed resource management plan. Availability of mineral, aggregate and energy sources would continue, but be somewhat limited. Timber and ecosystem management actions would impact natural and visual resources.

Adverse impacts to visual resources, wildlife habitat, potential wild and scenic rivers and state waterways, and unique natural areas would be slight. Water areas, wetlands, and watersheds would be protected. See Chapter 4 and the FPFO Objective 2: Forest Practices section of this appendix for further relevant discussions.

The proposed resource management plan attempts to balance conflicting uses in light of their consequences. Conflicting resource uses are most often resolved by protecting the Goal 5 resource sites or severely limiting conflicting uses to meet environmental goals.

Even without any tradeoffs to enhance or maintain the existing commercial forest program, tradeoffs would be necessary between Goal 5 resource values. For example, mineral and aggregate resource or energy source access and development frequently conflict with all other Goal 5 values, and strict guidelines for the management of designated or potential wilderness or federal wild rivers may virtually preclude development or active management to benefit other Goal 5 resource values.

Statewide Goal Number 6: Air, Water and Land Resources Quality

Description - To maintain and improve the quality of the air, water, and land resources of the state.

Consistency of Proposed Resource Management Plan - The federal and state water quality standards would be met and water quality would be maintained and/or improved. See Chapter 4, Effects on Water Resources, for discussion. Burning would have a potential effect on air quality, but without prescribed fire the effects of wildfires on air quality would increase. The proposed resource management plan would comply with the Oregon Smoke Management Plan and the state implementation plan. See Chapter 4, Effects on Air Quality, and the Forestry Program for Oregon Objective: Forest Practices Act section of this appendix for further discussion.

Statewide Goal Number 7: Areas Subject to Natural Disasters and Hazards

Description - To protect life and property from natural disasters and hazards.

Consistency of Proposed Resource Management Plan - Natural hazard areas, particularly floodplains and areas with highly erosive soils, have been identified. The proposed resource management plan provides for appropriate management of natural hazard areas. BLM-authorized developments within natural hazard areas would be minimal, with project construction engineering reflecting site-specific conditions and requirements.

Statewide Goal Number 8: Recreational Needs

Description - To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts. Federal agency recreation plans shall be coordinated with local and regional recreational needs and plans.

Consistency of Proposed Resource Management Plan - The BLM actively coordinates its recreation and land use planning efforts with those of other agencies to establish integrated management objectives on a regional basis. Opportunities would be provided to meet recreation demand (identified in Oregon's Statewide Comprehensive Outdoor Recreation Plan). Projected demand for all activities on BLM-administered lands would be met under the proposed resource management.

See Chapter 4, Effects on Recreation, for further discussion. There has been no specific interest in development of destination resort sites on BLM-administered lands.

Statewide Goal Number 9: Economic Development

Description - To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

Consistency of Proposed Resource Management Plan - The proposed resource management plan would support reduced levels of BLM resource dependent employment and payments to counties due to diminished timber production. Employment in rural areas would be most affected. See Chapter 4, Effects on Socioeconomic Conditions, for further discussion.

Statewide Goal Number 10: Housing

Not considered applicable.

Statewide Goal Number 11: Public Facilities and Services

Description - To plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

Consistency of Proposed Resource Management Plan - BLM-administered lands may be made available for development of public facilities or services by other parties if the action would be permitted under the local government comprehensive plan and land use regulations and the relevant state setting requirements.

Statewide Goal Number 12: Transportation

Description - To provide and encourage a safe, convenient, and economic transportation system.

Consistency of Proposed Resource Management Plan - The proposed resource management plan provides for accommodation of identified transportation needs, particularly for transportation of timber where not in conflict with Endangered Species Act requirements. Setting a major new transportation route (e.g., state highway), however, would require a plan amendment. Major utility corridors were considered and would be designated. The proposed resource management plan supports state policy objectives to restrict use of BLM roads for access to nonresource development that would be inconsistent with state planning goals.

Statewide Goal Number 13: Energy Conservation

Description - To conserve energy.

Consistency of Proposed Resource Management Plan - Conservation and efficient use of energy sources are objectives in all BLM activities. Although the proposed resource management plan finds some additional rivers suitable for inclusion in the National Wild and Scenic River System, which would restrict the possibility of development of their hydroelectric potential, there are no pending development proposals and those rivers are considered to have low potential for hydroelectric use. Firewood sales would be permitted, but firewood availability would be limited by allocation of substantial acreage to limited or no timber harvest.

Statewide Goal Number 14: Urbanization

Not considered applicable.

Statewide Goal Number 15: Willamette Greenway

Not considered applicable.

Statewide Goal Number 16: Estuarine Resources

Description - To recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and to protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity, and benefits of Oregon's estuaries.

Consistency of Proposed Resource Management Plan - No measurable impacts on estuarine resources from BLM-authorized activities are anticipated.

Statewide Goal Number 17: Coastal Shorelands

Description - To conserve, protect, where appropriate, develop, and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources, recreation, and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters. To reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands.

Consistency of Proposed Resource Management Plan - The proposed resource management plan would preserve and protect BLM-administered and other coastal shorelands delineated in acknowledged city and county comprehensive plans and land use regulations. It would close some coastal lands to vehicle use for protection of wildlife habitat and other values.

Statewide Goal Number 18: Beaches and Dunes

Description - To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and to reduce the hazard to human life and property from natural or man-induced actions associated with these areas.

Consistency of Proposed Resource Management Plan - The proposed resource management plan would comply with this goal. In particular, BLM management direction for the North Spit of Coos Bay and the New River areas—both proposed components of the Coastal Barrier Resources System—are consistent with management and development guidelines under the Coastal Barrier Improvement Act of 1990.

Statewide Goal Number 19: Ocean Resources

Not considered applicable.

Consistency of the Proposed RMP with State of Oregon Wildlife Plans

State Plan/Statute - Oregon Statutory Wildlife Policy, Revised Statute 496.012

Objective - Maintain all species of wildlife at optimum levels and prevent the serious depletions of any indigenous species.

Consistency of Proposed RMP - May maintain some populations at less than optimum (see later discussion of big game management objectives and Chapter 4, Effects on Wildlife.)

Objective - Develop and manage the lands and waters of the state in a manner that will enhance the production and public enjoyment of wildlife.

Consistency of Proposed RMP - Provides habitat for wildlife and fish species throughout the district. Most BLM-administered lands would be available for public enjoyment of wildlife.

Objective - Develop and maintain public access to the lands and waters of the state and its wildlife resources.

Consistency of Proposed RMP - Public access would be limited by access management.

Objective - Regulate wildlife populations and public enjoyment of wildlife in a manner that is compatible with primary uses of the lands and waters of the state and provide optimum public recreational benefits.

Consistency of Proposed RMP - Public enjoyment and recreational pursuit of wildlife is provided on the majority of BLM-administered lands and waters. The Dean Creek Elk Viewing Area is managed primarily for these purposes.

State Plan/Statute - Oregon Threatened and Endangered Species Act

Objective - Protect and conserve wildlife species that are determined to be threatened or endangered.

Consistency of Proposed RMP - All state listed species within the Coos Bay District are also federally listed under the Endangered Species Act. As such, these species will be protected under the requirements and provisions of the Act.

State Plan/Statute - Oregon's Sensitive Species Rule

Objective - Help prevent species from qualifying for listing as threatened or endangered.

Consistency of Proposed RMP - Species on Oregon's sensitive species list would be well protected. Also see later discussions of wild fish policy and fish plans.

State Plan/Statute - Nongame Wildlife Plan

Objective - Maintain populations of naturally occurring Oregon nongame wildlife at self sustaining levels within natural geographic ranges in a manner that provides for optimum recreational, scientific, and cultural benefits and, where possible, is consistent with primary uses of lands and waters of the state.

Consistency of Proposed RMP - See preceding discussions.

State Plan/Statute - Big Game Population Management Objectives

Objective - Develop, restore, and/or maintain big game (along with associated recreation, aesthetic, and commercial opportunities and benefits) at the level identified in 1980 as the planning target level by game management unit. This is accomplished through hunting season regulation and management practices on public lands that tend to stabilize the cover-forage relationship in space and time, provide for a wildlife emphasis in management of sensitive wintering areas, and offer habitat improvement opportunities.

Consistency of Proposed RMP - Forage on BLM-administered lands would decline. Private lands, however, are expected to provide adequate forage. Access management would improve habitat for elk.

State Plan/Statute - Wild Fish Policy

Objective - Protect and enhance wild stocks.

Consistency of Proposed RMP - Would not change habitat conditions enough in the short-term to alter existing stocks. In the long term, would protect streams sufficiently to protect wild stocks and provide sufficient stream habitat protection to contribute to their enhancement.

State Plan/Statute - Coho, Steelhead and Trout Plans

Objective - Maintain and enhance production.

Consistency of Proposed RMP - Similar to wild stocks. See preceding discussion.

State Plan/Statute - Basin Fish Management Plans

Objective - Establish compatible objectives for management of all fish stocks in each basin.

Consistency of Proposed RMP - Similar to wild stocks. See preceding discussion.

State Plan/Statute - Oregon Forest Practices Act Rules

Objective - Establish minimum standards which encourage and enhance the growing and harvesting of trees while considering and protecting other environmental resources such as air, water, soil, and wildlife.

Consistency of Proposed RMP - See FPFO Objective 2 below.

Consistency of the Proposed Resource Management Plan to the Forestry Program for Oregon (FPFO)

FPFO Objective 1: Forest Land Use

Preserve the forest land base of Oregon: Stabilize the present commercial forest land base. Manage habitat based on sound research data and the recognition that forests are dynamic and most forest uses are compatible over time.

Consistency of the PRMP - Preserves most of the forest land administered by BLM, while allowing for some conversion of forest to accommodate expansion of transportation, power, and communication facilities. Also allows for exchange and/or sale of some forest lands, which could lead to their conversion to nonforest uses if local land-use plans permit. Land that would be managed for commercial forest products totals 61,900 acres, less than the 247,600 acres currently allocated to commercial forest production. The allocation of additional land to uses other than timber production is based on current research data.

FPFO Objective 2: Forest Practices

Assure practical forest practices that conserve and protect soil productivity and air and water quality: Promote forest practices that maintain Oregon's forest values, including forest tree species, fish and wildlife, soil productivity, and air and water quality. The Forest Practices Act and rules are one vehicle for accomplishing this.

Consistency of the PRMP - Provides for the use of practical forest practices that meet this goal and meet or exceed the requirements of the Oregon Forest Practices Act and rules of the Oregon Smoke Management Plan, with two possible exceptions:

1. Possible inconsistency with the clear cut size and proximity requirement of Section 4 of the Forest Practices Act as revised in 1991. Recent interpretations of that requirement indicate that, for its purposes, "clear cuts" include most shelterwood harvest units so they would also include harvest units with retention of 6 to 8 green trees per acre and even with 10 to 18 per acre. Although BLM harvest units will be fragmented by Riparian Reserves, the 300-foot distance (from adjacent units) requirement in the Act would not cover all units on both sides of intermittent streams; thus, the 120-acre limit might be violated, though the Proposed Plan seems consistent with the Forest Practices Act objective.

2. The requirement for smoke management clearance prior to burning slash and the need for completion of burning before replanting may cause delay in reforestation beyond the one year required by the Act.

FPFO Objective 3: Timber Growth and Harvest

Promote the maximum level of sustainable timber growth and harvest on all forest lands available for timber production, consistent with applicable laws and regulations and taking into consideration landowner objectives.

Consistency of the PRMP - Provides for the use of intensive forest management practices that are professionally and environmentally sound, to promote timber growth and harvest on all forest lands allocated as available for such intensive management, consistent with the Plan's goals and objectives.

FPFO Objective 4: Recreation, Fish and Wildlife, Grazing, and Other Forest Uses

Encourage appropriate opportunities for other forest uses, such as fish and wildlife habitat, grazing, recreation and scenic values on all forest lands, consistent with landowner objectives: A full range of recreation opportunities is encouraged. Where needed to reduce harassment and/or over harvest of wildlife, road closure programs are supported.

Consistency of the PRMP - Provides opportunities for other forest uses consistent with the plan's goals and objectives. Road closures to protect wildlife habitat and other values are emphasized.

FPFO Objective 5: Forest Protection

Devise and use environmentally sound and economically efficient strategies to protect Oregon's forests from wildfire, insects, disease, and other damaging agents: Use integrated pest management. Minimize total cost plus loss resulting from wildfire. Employ cost-effective fire management policies that emphasize planned ignition fires over natural ignition fires and that consider impacts to the state's forest fire protection program.

Consistency of the PRMP - Economically efficient protection strategies would be employed, and integrated pest management would be used. Minimizing total cost plus loss from wildfire would be integral. Planned-ignition prescribed fires would be emphasized over natural-ignition prescribed fires, but the latter could be used to achieve resource and fire management objectives. Cooperation with other fire suppression agencies, including state and local agencies, would help assure cost-effective fire protection and suppression by all parties.

Appendix GG. Public Involvement in the RMP Process

Agencies and Organizations Contacted

The RMP/EIS team, or supporting individuals in the Oregon State Office, contacted or received input from the following agencies and organizations during the preliminary steps or development of the PRMP:

Federal Agencies

U.S. Department of Transportation
Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians
USDI, Bureau of Mines
USDI, Fish & Wildlife Service
USDA, Forest Service
USFS, Pacific Northwest Region
USDI, Minerals Management Service
USDI, National Park Service
USDE, Bonneville Power Administration
U.S. Environmental Protection Agency

State of Oregon Agencies

Governor, State of Oregon
Office of the Governor (Governor's Forest Planning Team)
State Economist
Commission on Futures Research
Department of Agriculture
Economic Development Department
Department of Energy
Department of Environmental Quality
Department of Fish and Wildlife
Forestry Department
Department of Geology and Mineral Industries
Department of Human Resources, Employment Division
Department of Land Conservation and Development
Parks and Recreation Department
Department of Transportation, Highway Division
Water Resources Department
Oregon State University
Southwestern Oregon Community College

Local Governments and Other Government Bodies

City of Reedsport
City of North Bend
City of Coquille
City of Myrtle Point
City of Coos Bay
Association of O&C Counties
Association of Oregon Counties
Coos County, Board of Commissioners

Douglas County, Board of Commissioners
Curry County, Board of Commissioners
Curry County, Planning Department
Coos County, Planning Department
Douglas County, Planning Department
Lane County, Planning Department
Coos Curry Council of Governments

Organizations

Curry County Reporter
Cape Arago Audubon Society
Central Oregon Motorcycle and ATV Club
Coos-Curry-Douglas Business Development Corp.
Highlands Bed and Breakfast
Zolezzi Insurance Agency
W.O.O.D. (Workers of Oregon Development)
Oregon AFL-CIO
Friends of the Sixes River
Bay Area Chamber of Commerce
Oregon International Port of Coos Bay
Public Lands Foundation
Leopold Club
The Wilderness Society
Society of American Foresters, Coos Chapter
Coos Forest Protective Association
Port of Coquille River
Oregon Natural Resources Council
Coos Bay-North Bend Water Board
Lower Umpqua Chamber of Commerce
The Nature Conservancy, Oregon Field Office
Defenders of Wildlife
Mazamas
NCAP (Northwest Coalition for Alternatives to Pesticides)
The Wildlife Society, Oregon Chapter
South Coast Trail Riders
Northwest Reforestation Contractors Association
Sierra Club
Native Plant Society of Oregon
Oregon Forest Products Transportation Association
Coast Range Association
Northwest Forest Resource Council
Oregon Logging Conference
National Wildlife Federation
Allium Farms
The Pacific Rivers Council
Audubon Society of Portland
Coos Bay District Advisory Council
Citizens Natural Resources Group
Pacific Northwest Four Wheel Drive Association
Western Forest Industries Association
Trout Unlimited
The Wildlife Society, Oregon Chapter
American Fisheries Society, Oregon Chapter
Coalition for Wise Forest Use
Eastern Oregon Mining Association

Friends of Greensprings
Headwaters
Local Residents for Old-Growth
National Association of Conservation Districts
National Audubon Society
Northwest Environmental Defense Center
Northwest Federation of Mineralogical Societies
Northwest Forestry Association
Northwest Rivers Council
Northwest Timber Association
Oregon Rivers Council
Sierra Club, Oregon Chapter
Siskiyou Audubon Society
Southern Oregon Timber Industries Association
Umpqua Valley Audubon Society
Upper Cow Creek Community Center
Western Forest Industries Association
Western Wood Products Association
Willamette Timberman Association

Corporations

Douglas Timber Operators Inc.
Associated Oregon Loggers, Inc.
NCASI (National Council of the Paper Industry for Air and Stream Improvement, Inc.)
Reservation Ranch
Longview Fibre Company
Pasco Logging, Inc.
Menasha Corporation
Kirkpatrick Logging, Inc.
Reservation Ranch
Swanson Bros. Lumber Co., Inc.
Georgia-Pacific Corporation
Diamond Wood Products, Inc.
Swanson Bros. Lumber Co., Inc.
Fir Springs Tree Farm
East Fork Lumber Co., Inc.
Weyerhaeuser
D. R. Johnson Lumber Company
C & D Lumber Company
Starker Forest, Inc.
Pacific Power and Light
Coos-Curry Electric Cooperative, Inc.
Douglas Electric Cooperative, Inc.
Western Utility Group

Agencies, Organizations, and Individuals Provided Copies of the Draft RMP/EIS

Copies of the draft RMP/EIS were provided to the following organizations or individuals:

Environmental Protection Agency, Portland OR
USDI Geological Survey, Reston VA
National Resource Defense Council, Inc., Washington DC

NW Forest Resource Council, Portland OR
Minerals Management Service, Camarillo CA
National Park Service, Washington DC
Bureau of Land Management, Billings MT
Defenders of Wildlife, Washington DC
University of Montana, Missoula MT
US Bureau of Mines, Washington DC
USDI - Offshore Environmental Assessment Division, Washington DC
Bureau of Land Management, Reno NV
Western Network, Santa Fe NM
NW Power Planning Council, Portland OR
Bureau of Land Management, Sacramento CA
Bureau of Land Management, Lakewood CO
USDA FS Six Rivers National Forest, Gasquet CA
Department of Energy, Washington DC
Bureau of Land Management Library, Denver CO
Wildlife Management Institute, Washington DC
Advisory Council, Golden CO
Office of Environmental Coordination USDA, FS, Washington DC
Oregon Natural Resources Council, Portland OR
Division of Environmental Affairs, Washington DC
USDI National Resources Library, Washington DC
Bureau of Land Management, Cheyenne WY
Bureau of Land Management, Santa Fe NM
Bureau of Land Management, Boise ID
Public Lands Council, Washington DC
Bureau of Reclamation, Boise ID
American Mining Congress, Washington DC
FERC-Hydro Power Division, Washington DC
Portland State University Library, Portland OR
Office of Public Affairs, Washington DC
Bureau of Land Management, Salt Lake City UT
Bureau of Land Management, Phoenix AZ
Bureau of Land Management, Salem OR
US Geological Survey, Salem OR
Oregon Water Resources Department, Salem OR
Western Forest Industries Assn., Portland OR
Mason, Bruce, Girard, Inc., Portland OR
Oregon Sheepgrowers Assn., Salem OR
Oregon State Library, Salem OR
Oregon Department of Fish & Wildlife, Portland OR
Mazamas, Portland OR
USFS Regional Forester, Portland OR
U.S. Fish & Wildlife Service, Portland OR
Oregon State University Library, Corvallis OR
Oregon Department of Fish & Wildlife, Corvallis OR
Oregon Department of Transportation, Salem OR
Bureau of Land Management, Eugene OR
Leopold Interpretation Club, Brookings OR
University of Oregon Library, Eugene OR
Lakeside Public Library, Lakeside OR
Mapleton Ranger District USFS, Mapleton OR
The Oregon Rivers Council, Eugene OR
Sierra Club, Eugene OR
NW Coalition for Alternatives to Pesticides, Eugene OR
Port Orford Library, Port Orford OR
Hazel M. Lewis Library, Powers OR

Oregon Department of Fish & Wildlife, Roseburg OR
Bureau of Land Management, Roseburg OR
Headwaters, Ashland OR
Bureau of Land Management, Medford OR
Bureau of Land Management, Prineville OR
Bureau of Land Management, Klamath Falls OR
Bureau of Mines, Spokane WA
Bureau of Land Management, Burns OR
USDI National Park Service, Seattle WA
Sierra Club, Seattle WA
Bureau of Land Management, Lakeview OR
Bureau of Land Management, Vale OR
Sierra Club Legal Defence Fund, Seattle WA
Fibrex Shipping Co. Inc., Portland OR
USFS Region 6, Portland OR
Thomas J. Murray & Assoc., Portland OR
Bureau of Land Management, Ukiah CA
CHEC - Forest Watch, Oak Grove OR
Oregon Coastal Zone Mgt. Inc., Newport OR
Lane Co. Board of Commissioners, Eugene OR
Lane Co Dept. of Land Management, Eugene OR
Coos Bay Public Library, Coos Bay OR
Paul F. Ehinger & Assoc., Eugene OR
Northwest Forestry Association, Eugene OR
Siuslaw National Forest, Corvallis OR
Bandon Public Library, Bandon OR
Zip-O-Log Mills Inc., Eugene OR
Chetco Public Library, Brookings OR
Lane Community College Library, Eugene OR
Department of Environmental Quality, Coos Bay OR
Stuntzner Engineering & Forestry, Coos Bay OR
The WORLD, Coos Bay OR
Coquille Public Library, Coquille OR
Coos County Commissioners, Coquille OR
West Forest Wood Products Co., Coos Bay OR
Davidson Industries, Inc., Mapleton OR
Langlois Public Library, Langlois OR
Curry County Planning Department, Gold Beach OR
Curry County Library District, Gold Beach OR
Curry County Board of Commissioners, Gold Beach OR
U.S. Forest Service, Gold Beach OR
Curry County Reporter, Gold Beach OR
NEPA Coordinator Gold Beach Ranger District, Gold Beach OR
NEPA Coordinator Powers Ranger District, Powers OR
Stebbins and Coffey, North Bend OR
Cape Arago Audubon Society, North Bend OR
Powers Ranger District, Powers OR
Kalmiopsis Audubon Society, Port Orford OR
North Bend Public Library, North Bend OR
Erickson Air-Crane Co., Central Point OR
Reedsport Public Library, Reedsport OR
Bureau of Land Management, Medford OR
County Forester, Reedsport OR
Soil & Water Conservation District, Reedsport OR
Oregon Dunes NRA, Reedsport OR
Erosion Control Inc., Grants Pass OR
Siskiyou National Forest, Grants Pass OR

C & D Lumber Co., Riddle OR
Douglas County Planning Department, Roseburg OR
Douglas County Library, Roseburg OR
Douglas Timber Operators, Roseburg OR
A. M. McCoy, Corvallis OR
Allan Rumbaugh, International Port of Coos Bay, Coos Bay OR
Alex Sifford, Oregon Dept. Of Energy, Salem OR
Andrea Neal, Beak Consultants, Portland OR
Andrea Nygren, Bureau of Land Management, Springfield VA
Andy Klemm, Coquille OR
Ann Kinnamon, Milwaukie OR
Anne Almy, Appellate Section US Dept. Of Justice, Washington DC
Anne Bowers, Society of American Foresters, Bethesda MD
Art Ayre, Oregon Economic Development Dept., Salem OR
Avis Rene, Oregon City OR
Bill Bradbury, Oregon State Senate, Salem OR
Bill Dryden, Monmouth OR
Bill Grile, Director, Coos Co. Planning Dept., Coquille OR
Bill Lansing, Menasha Corporation, North Bend OR
Bill Russell, Shoreline Ed. for Awareness, Bandon OR
Blair A. Holman, Georgia-Pacific Corp., Coos Bay OR
Bob Brown, Oregon Dept. Of Forestry, Salem OR
Bob Freimark, The Wilderness Society, Portland OR
Bob Gunther, Coos Bay OR
Bob Klemenhagen, North Bend OR
Bob McKellar, Coos-Curry Ore. Log Truck Assn., Salem OR
Bob Metzger, Portland OR
Bob Warren, Governors Forest Planning Team, Salem OR
Bonnie Joyce, Myrtle Point OR
Carl & Phyllis Bay, Bandon OR
Carl Sullivan, American Fisheries Society, Bethesda MD
Carleene Compton, Reedsport OR
CH2M Hill, Portland OR
Carlin Williams, Reedsport OR
Cheryl Greenstreet, Central OR. Motorcycle & ATV Club, Bend OR
Chris Tapp, Waldport OR
Christopher Ubert, Sport Fishing Institute, Washington DC
Chuck Tyler, Rogge Lumber, Bandon OR
Cindy Snelling, Roseburg Forest Products, Coquille OR
Craig Neikirk, North Bend OR
Curtis Jacks, Coquille OR
Dan Carleson, Oregon Dept. Fish & Wildlife, Portland OR
Daniel Fogerty, Fall River Mill CA
Darwin Pullen, Myrtle Point OR
Dave Douglas, Sixes OR
Dave Loomis, Oregon Dept. Fish & Wildlife, Roseburg OR
Dave Mazza, Chairman Sierra Club - Oregon Chapter, Portland OR
Dave Stere, Oregon St. Dept. of Forestry, Salem OR
David Anderson, Sherwood OR
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Paula Burgess, Port Orford OR
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Vern Hammond, Abercrombie ND

Viola Cafferata, Klamath Forest Alliance, Etna CA
Walter Urbach, Bandon OR
Wayne Shuyler, Oregon State Marine Board, Salem OR
William Mast, Coquille OR
William Revelle, Coquille OR
Zane Smith Jr., Springfield OR

Agencies, Organizations, and Individuals Who Commented on the Draft RMP/EIS

The following agencies, organizations, and individuals submitted comments on the Draft RMP/EIS:

List of Commenters

Commenters are grouped by federal agencies, state agencies, local governments, organizations, and individuals. Letters numbered C000XXX were sent directly to the Coos Bay District. Letters numbered X000XXX were sent to the Oregon State Office, with copies sent to the District.

Letter Number	Name	Title/Organization
Federal Agencies		
C000060	John R. Norberg	Chief Branch of Engineering and Economic Analysis, USDI, Bureau of Mines
C000030	Skip Brainard	Tribal Council Chairman, Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians
C000002	Eugene L. Lehr	Chief Environmental Division, U.S.Department of Transportation
C000921	Charles E. Findley	Director, Water Division, EPA
C000932	Patrick D. Wright	Acting Field Supervisor, USDI, Fish & Wildlife Service
C000940	John E. Lowe	Regional Forester, U.S. Department of Agriculture, USFS
X000051	John E. Lowe	Regional Forester, USFS Pacific Northwest Region
C000934	Sarah E. Greene	Research Natural Areas Scientist, USFS, Pacific Northwest Region
State Agencies		
X000044	Barbara Roberts	Governor, State of Oregon
C000666	Anne Squier	Senior Policy Advisor Natural Resources, Office of the Governor
X000045	Delna Jones	State Representative, Oregon House of Representatives
X000027	Eugene D. Timms	Senate Republican Leader, Oregon State Senate
C000033	Bob Warren	Special Assistant for Forest Policy, Governor's Forest Planning Team (draft response)
Local Government		
X000052	Donna M. Peterson	Staff Assistant, Clackamas County Board of Commissioners
C000949	Doc Stevenson	Coos County Commissioner, Coos County
C000912	Bill Grile	Director, Coos County Planning Department
C000797	Joanne Verger	Mayor, City of Coos Bay
C000798	Joanne Verger	Mayor, City of Coos Bay
C000210	Loren Weise	Mayor, City of Coquille

X000019	Wes Anderson	Council President, City of Drain
C000616	Doug Robertson	Commissioner, Douglas County Board of Commissioners
C000463	Edward Cook	Mayor, City of Myrtle Point
C000462	Richard Meyers	City Manager, City of Myrtle Point
C000167	Timm A. Slater	Mayor, City of North Bend
C000169	Timm A. Slater	Mayor, City of North Bend
C000145	Nolan K. Young	City Manager, City of Reedsport

Organizations

C000918	Steve Fergus	Allium Farms
X000043	Philip Howell	Pres. Executive Committee, American Fisheries Society, Oregon Chapter
C000615	James E. McCauley	Forest Policy Analyst, Associated Oregon Loggers, Inc.
C000472	Rocky McVay	President, Association of O&C Counties
X000016	Rocky McVay	President, Association of O&C Counties
X000017	Michael J. Sykes	President, Association of Oregon Counties
C000450	Crystal Shoji	Executive Director, Bay Area Chamber of Commerce
C000938	Paul Ketcham	Conservation Director, Audubon Society of Portland
C000004	Jeffrey G. Sherman	Conservation Officer, Cape Arago Audubon Society
C000052	Cheryl A. Greenstreet	Sec./Treas., Central Oregon Motorcycle and ATV Club
C000302	Stephen Gunther	President, Citizens for Obstructing Government
X000005	Michael W. Wiedeman	Chairman, Citizens Natural Resources Group
C000824	Chuck Willer	Director, Coast Range Association
C000948	Jack L. Beebe	Coos Bay District Advisory Council
C000945	Nancy Cook	Coos Bay District Advisory Council
C000943	Ron Fox	Coos Bay District Advisory Council
C000947	Don Gurney	Coos Bay District Advisory Council
C000942	Frank Lyon	Coos Bay District Advisory Council
C000946	Greg Norton	Coos Bay District Advisory Council
C000944	Darwin Pullen	Coos Bay District Advisory Council
C000584	Phil A. Matson	General Manager, Coos Bay-North Bend Water Board
C000578	Gene Brock	District Manager, Coos Forest Protective Association
C000109	Terry Hanscam	Chair, Coos-Curry-Douglas Business Development Corp.
C000003	Bob Van Leer	Publisher, Curry County Reporter
C000600	Todd Burkholder	Biodiversity Consultant, Defenders of Wildlife
X000012	Todd Burkholder	Biodiversity Consultant, Defenders of Wildlife
C000599	Greg Foster	Diamond Wood Products, Inc.
C000175	Julie Lewis	DEJA, Inc.
X000002	Tom Varley	D.R. Johnson Lumber Company
C000575	Rod Greene	President, Douglas Timber Operators, Inc.
C000800	Robert Sproul	East Fork Lumber Co., Inc.
C000614	Jeff Smith	Board Chairman, Elkton Public Schools
C000006	Lee O. Hunt	Fir Springs Tree Farm (draft response)
C000022	Lee O. Hunt	Fir Springs Tree Farm
X000004	Lee O. Hunt	Fir Springs Tree Farm
C000329	Cheryl Douglass	Friends of the Sixes River
C000469	Blair A. Holman	Resource Manager, Georgia-Pacific Corporation
C000937	Oris W. Beuchs	Board Chairman, Glendale School District #77
C000125	James B. Dow	Highlands Bed and Breakfast
C000465	Dan Kirkpatrick	Kirkpatrick Logging, Inc.
C000459		Leopold Club
C000200	David L. Bowden	Sr. Vice President-Timber, Longview Fibre Company
C000585	David R. Davis	Lower Umpqua Chamber of Commerce
C000608	Barbara Becker	Chair, Mazamas
X000040		Mazamas Conservation Committee

C000952	Oscar R. Nealy	Madroak Logging
C000307	William A. Lansing	Vice President, Menasha Corporation
C000815	Larry L. Irwin	National Wildlife Program Manager, NCASI
C000610	Norma Grier	Executive Director, NCAP
C000910	Richard T. Brown	Resource Specialist, National Wildlife Federation
C000816	Kate Dwire	State Conservation Co-chair Westside Issues, Native Plant Society of Oregon
C000911	Tom Pringle	Native Plant Society of Oregon
C000589	Dick Vander Schaaf	Public Lands Coordinator, The Nature Conservancy-Oregon Field Office
C000574	Phil Bauman	Chairman North Bend School District #13, Board of Directors
X000018	Jim Geisinger	Board of Directors, Northwest Forest Resource Council
C000908	Jim Geisinger	Board of Directors, Northwest Forest Resource Council
C000802	Martin Jack Desmond	Northwest Reforestation Contractors Assn.
C000308	Bradley K. Witt	Secretary-Treasurer, Oregon AFL-CIO
C000455	Rudy W. Juul	President, Board of Commissioners, Oregon International Port of Coos Bay
C000822	Robert H. McKellar	President, Oregon Forest Products Transportation Association
C000586	Daniel Applebaker	President, Oregon Logging Conference
C000909	Daniel Applebaker	President, Oregon Logging Conference
X000029	Daniel Applebaker	President, Oregon Logging Conference
C000580	Mark Hubbard	Oregon Natural Resources Council
C000001	Donald B. Zobel	Professor, Oregon State University
X000006	Tom Harris	Southern Oregon Land Matters Chairman, Pacific Northwest Four Wheel Drive Association
C000936	Bob Doppelt	Executive Director, The Pacific Rivers Council
X000047	Bob Doppelt	Executive Director, The Pacific Rivers Council
C000212	Glen J. McGuire	Broker/Owner, Park Place Real Estate
C000449	Jaime Yraguen	Vice President, Pasco Logging, Inc.
C000301	Juan Yraguen	Treasurer, Pasco Logging, Inc.
C000303	Nick Yraguen	President, Pasco Logging, Inc.
C000579	Scott Ashcom	Port Administrator, Port of Coquille River
C000458	Gene Peterson	Medford District Rep., Public Lands Foundation
C000007	Michael Bormuth	Reservation Ranch
C000466	Jason Conger	Reservation Ranch
C000027	Janet W. Hurt	Robert D. Hurt & Son Inc.
C000812	Hal Hushbeck	Chairman, Sierra Club
C000142	Raymond H. Fischer	Sierra Club
C000576	Al Krenz	Coos Chapter Chair, Society of American Foresters
C000446	Sherilynn Whipple	South Coast Saw & Garden
C000799	Mike Smith	President, South Coast Trail Riders
C000100	Bill Lemoine	Professor, Forest Resources Technology Southwestern Oregon Community College
C000136		Star of Hope
C000609	Sam Konnie	President, Swanson Bros. Lumber Co., Inc.
C000467	Mike Randall	Swanson Bros. Lumber Co., Inc.
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X000008		The Wilderness Society
C000473	Robert M. Freimark	Assistant Director, The Wilderness Society
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C000617	Gene D. Silovsky	Chairman Conservation Affairs Committee, The Wildlife Society, Oregon Chapter
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C000913	Marvin Zuber	Zuber & Son Logging, Inc.
C000915	Sharon Zuber	Zuber & Son Logging, Inc.

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C000404	Ross Bennett
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C000171	Ron Bishop
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C000159	Rich Blake
C000228	Michael J. Blanchard
C000384	Hosia Blankenship
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C000760	M. D. Blankenship
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C000392	Christi Boerste
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C000114	Reme Boots
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C000046	John Botz
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C000556	Beulah B. Carey
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C000683	Cheryl Carney
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C000739	Lonnie J. Carroll
C000843	Dick Casebeer
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C000386	Judy Cave
C000381	Rubye Chadick
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C000867	Linda Chambers
C000596	Jim Churchill
C000315	Kelly J. Churchill
C000924	Nancy Churchill
C000481	Calvin Clack
C000522	Alishya Clark
C000268	Bryan Clark
C000521	Catherine Clark
C000547	Catherine Clark
C000242	Elmer J. Clark
C000256	Jerry L. Clark
C000377	Kenneth E. Clark
C000244	Kirby Clark
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C000642	Donald Clute
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C000490	Frank X. Condon
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C000087	Harry L. Cook
C000185	John Cook
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C000906	Ross Cooley
C000028	Daniel Cooper
C000737	Thomas D. Cornell
C000285	Thomas Cottrell
C000682	James E. Coulter
C000722	D. W. Justin Cox
C000860	Jack Cox
C000861	Janice Cox
C000391	Harry Coxey
C000390	Rhoda Coxey
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C000493	Kelvin Crawford
X000010	William Ivan Cross

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C000872	Wyatt Dunham
C000602	Robbie Earon
C000424	Aaron Eaton
C000426	Julie Eaton
C000430	Tyson Eaton
C000425	Wally Eaton
C000127	Lorance Eickworth
C000209	Daniel Elbaum
C000364	Bob Ellenwood
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C000223	Michael Evans
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C000143	Donald H. Evanson

C000545	Chad Feely
C000542	Derek Feely
C000544	Dustin Feely
C000548	Jason Feely
C000540	Jay Feely
C000561	Joan Feely
C000504	Kasie Feely
C000533	Peggy Feely
C000503	Phyllis Feely
C000534	Rick A. Feely
C000546	Tim Feely
C000704	Michael S. Field
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C000631	Brenda Fitzgerald
C000630	Steve Fitzgerald
C000152	Timothy M. Fjeld
C000154	Tresa M. Fjeld
C000702	Doris C. Fleming
C000363	Terry Fluetsch
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C000277	Zorayda Ford
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C000594	James R. Fourtner
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C000869	Angel Fry
C000080	Gudron Fry
C000496	Sean R. Frye
C000401	Delbert Fugate
C000325	Debra A. Fuller
C000832	David Galas
X000049	Gerald Gallmuster
C000068	Robert L. Gardner
C000790	Blaine E. Garman
C000498	Marty Garren
C000410	Randolph Lee Garrison
C000321	Greg A. Gaston
C000408	L. Gaston
C000257	Judy Gates
C000298	Mike Gaudette
C000019	Betty Gearhart
C000020	Betty Gearhart
C000335	Connie Gibson
C000435	Dexter Gibson
C000438	Heather Gibson
C000613	Jessie Gibson
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C000570	Debi Gilbert
C000728	William A. Glampe
C000730	Kelly R. Glampe
C000729	Floyd E. Godsey
C000196	Allen L. Golder
C000195	Lee C. Golder

C000862	Glen M. Good
C000219	Melvin Gowey
C000411	Lila Graighead
C000720	Rodney B. Gray
C000300	Michael Graybill
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C000796	Lee R. C. Greene, Jr.
C000235	Scott Greenwalt
C000507	Mamie Greenwalt
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C000836	Ron Gribble
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C000070	Patrick J. Griffin
C000788	Reed J. Gross, Jr.
C000941	Kim Gurley
C000101	Gary Haga
C000834	Eleanor C. Hall
C000359	Steve Hall
C000287	John L. Hammond
C000685	Michael W. Hankins
C000684	Richard L. Hannigan
C000281	Jill Hanson
C000550	James Hargraves
C000448	R. A. Harrington
C000627	Kenneth R. Harrison
C000013	Don Harroun
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C000275	Jonpaul I. Harvey
C000686	Brad A. Hatley
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C000567	Oscar L. Haug
C000129	Daryl Hauser
C000081	C. W. Heath
C000527	Scott Hebard
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Comments from Governmental Agencies, Elected Officials, and Native American Groups

Due to the large volume of comments received, only letters from government agencies, elected officials, and Native American groups are reproduced in Appendix HH. In cases where the same letter was sent to both the Oregon State Office and the Coos Bay District Office, only one letter is reproduced. Copies of all letters that were received are available for review at the district office.

Summary of Comments and BLM's Response

The substantive comments received on the Draft RMP/EIS were paraphrased and grouped by resource. The comments, along with their responses, are included in Volume III.

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